PROSPECTIVE PAYMENT
ASSESSMENT COMMISSION

MEDICARE PROSPECTIVE PAYMENT AND THE AMERICAN HEALTH CARE SYSTEM

REPORT TO THE CONGRESS

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Prospective Payment
Assessment Commission

Medicare Prospective Payment and the American Health Care System

Report to the Congress

February 1986

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FEB 28 1986

The Honorable George Bush
President of the Senate
United States Senate
Washington, D.C. 20510

Dear Mr. President:

I am hereby transmitting to the Congress the report, Medicare Prospective Payment and the American Health Care System. This report has been prepared by the Prospective Payment Assessment Commission as requested by the Committee on Appropriations of the House of Representatives (H. Rep. No. 911, 98th Cong., 2d Sess. 140 (1984)).

Sincerely,

Stuart H. Altman

Stuart H. Altman, Ph.D.
Chairman

Enclosure

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FEB 28 1986

The Honorable Thomas P. O'Neill, Jr.
Speaker
U.S. House of Representatives
Washington, D.C. 20515

Dear Mr. Speaker:

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Executive Summary

Executive Summary

Medicare expenditures rose from about $4 billion to almost $40 billion from 1970 to 1984. In the three years between 1979 and 1982, Medicare inpatient hospital expenditures rose by almost 60 percent. Though some limits were placed on Medicare hospital payments prior to 1983, payment was generally on a cost basis, which provided little incentive for efficiency. In 1983, the Congress replaced Medicare's cost-reimbursement system for inpatient hospital care with the prospective payment system (PPS) to encourage efficient provision of inpatient care.

In this report to the Congress, the Prospective Payment Assessment Commission (ProPAC) presents its initial observations about changes PPS has caused. It must be emphasized that more time must elapse before sufficient data will be available to provide an overall assessment of the effects the new payment system has had on the American health care system. In future reports, the Commission will seek verification of these preliminary findings and will expand analysis to other issues.

MEDICARE PROSPECTIVE PAYMENT AND OTHER CHANGES IN HEALTH CARE

Under PPS, Medicare now pays a predetermined rate for each discharge, encouraging hospitals to reduce per-discharge costs. On the basis of principal diagnosis and certain other factors, each discharge is assigned to one of 468 diagnosis-related groups (DRGs) for payment. The new payment system encourages hospitals to lower their expenses for inpatient stays. This can be accomplished by lowering expenses during an admission and by shifting some services out of the hospital.

Hospitals appear to be responding to the incentives of per-discharge payment, but they are also reacting to other influences. Changes in private sector health care financing and in medical technology have also encouraged changes in hospital care, many of which began before implementation of PPS.

REDUCED HOSPITAL USE AND LOWERED EXPENSES

Although average length of stay for Medicare patients has been declining over the past decade, changes in hospital behavior in response to PPS resulted in a much larger drop in 1984 — 7.6 percent — than in any year since 1970. The drop in the length of stay occurred because of a reduced number of days in routine care; stays in intensive care and coronary care units changed only slightly since the implementation of PPS. Surgical patients now enter the hospital closer to scheduled surgery and leave sooner following surgery than in 1981.

In 1984, Medicare inpatient admissions declined unexpectedly by almost 5 percent, and it appears that admissions declined by a larger percentage in 1985. Many analysts had expected admissions to rise, as hospitals sought higher revenue by increasing their volume. This surprising decline in admissions caused 1985 Medicare expenditures for inpatient care to be significantly lower than expected.

While hospitals have shortened length of stay, they do not appear to have substantially reduced provision of ancillary services. Use of some ancillaries, such as drugs, appears to have risen. Other services, such as radiology and laboratory, have declined slightly.

Hospital expenses per patient day and per admission appear to have risen but somewhat more slowly than their historical averages. This trend is sensitive to hospitals' inability or

unwillingness to reduce staffing and other expenses as rapidly as admissions and length of stay have declined. On a per-capita basis, however, hospital expenses rose less than inflation. Per-capita expenses rose only 2.5 percent in 1984 while prices of the goods and services used by hospitals rose by 6.0 percent. By comparison, between 1976 and 1982, per-capita expenses rose at an average annual rate of 12.6 percent.

THE FINANCIAL CONDITION OF HOSPITALS UNDER PROSPECTIVE PAYMENT

Original PPS rates were higher than intended but stringent updates expected in the near-term might offset this difference. Per-case payments under national rates are about 5 percent higher than payments under hospital-specific rates, which are based on each hospital's own historical costs. This probably occurred because it was necessary to use unaudited data in calculating national PPS rates.

Final implementation of national prospective payment rates for Medicare will change the distribution of Medicare revenue among hospitals. The distributional consequences of paying for hospital care on the basis of national rates increase the need to understand why historical cost differences have existed. If factors beyond the hospitals' control cause some regions to have higher than average costs, for example, the distribution may lead to relatively more financial stress and risk to service quality and access than in areas where costs have been historically low. On the other hand, preliminary evidence indicates that the largest declines in length of stay occurred in the highest-cost regions.

Relative to the average increase in payments under PPS, hospitals in the Middle Atlantic region, urban areas, and those with large teaching programs tend to fare better under national rates. This distribution is influenced by New York's inclusion in PPS, which began on January 1, 1986. Payments for many New York hospitals will probably be significantly higher under fully national PPS rates than under that state's hospital rate-setting program.

In general, hospitals improved their financial position during 1984, partly because they could realize a profit on Medicare patients for the first time. Hospitals reported about a one-third increase in profitability. Their ability to meet short-term obligations also improved. Whether the industry's favorable financial performance will continue is unknown.

CHANGES IN ACCESS AND QUALITY

Some beneficiaries and providers perceive that quality of care has deteriorated under PPS. Through the news media, the public has become aware of instances where Medicare beneficiaries or their families felt that earlier discharge from the hospital adversely affected recovery. Sufficient data do not now exist to determine the prevalence of these problems and whether they were caused by hospital responses to PPS. Access to and quality of care under the new payment system need further study and continuous monitoring.

To date the mechanism responsible for monitoring the care provided to beneficiaries, the Peer Review Organization (PRO) program, has played only a limited role in quality assurance under PPS. PROs have been unable to assess the overall quality of care for beneficiaries because their review activities are limited to inpatient hospital care. They do not monitor the care beneficiaries receive after discharge or the outcome of an episode of illness. Although each PRO established explicit quality objectives, they have been limited to inpatient care and focus on the appropriate use of inpatient services, not on health outcomes.

There was a widespread perception when PPS was adopted that the development and

diffusion of new medical technology would be slowed. Currently available data do not permit the Commission to reach conclusions about the rate of adoption of technology under PPS. The rate of adoption of one major new technology, magnetic resonance imaging (MRI), has been slower than the rate for computerized tomography (CT) during the 1970s. Hospital capital spending, which includes some purchases of new technology, continues to increase more rapidly than total hospital costs.

The observed reduction in the length of stay for Medicare beneficiaries suggests that patients are being discharged at an earlier point in their recovery, but the implications of this change for health care outcomes are uncertain. Earlier discharge under PPS could represent a decline in the provision of nonacute services to inpatients but not necessarily a reduction in quality. Patients discharged earlier than they would have been three years ago may not require the extensive services provided to inpatients and could appropriately be cared for in alternative settings. At some level, further reductions in the length of stay will reduce quality, but that minimum level is not yet known.

The decline in the average length of stay increases demand for post-discharge services. In some areas, however, unavailability of these services limits access to needed services after discharge. Although hospitals appear to be discharging more beneficiaries to nursing homes or to their residences for home health services, stringent criteria have limited growth in Medicare coverage in these settings. The use of post-discharge services appears to have increased, but more beneficiaries or their families purchase the services themselves. Currently available data do not indicate how much use of post-discharge services has increased since implementation of PPS.

At the time the Congress enacted PPS, the public did not perceive that beneficiaries and their families would become responsible for a larger portion of their health care costs. For Medicare patients, the inpatient deductible increased as a direct result of the drop in the average length of stay. In 1986, the increased deductible caused by a shorter length of stay will shift about $550 million to Medicare beneficiaries. In addition, earlier discharge may require the use of services that are not extensively covered by Medicare or of services for which a copayment is required, such as preadmission ambulatory services.

CHANGES IN FINANCING HEALTH SERVICES

For Medicare, the shift to alternative settings for care has reduced expenditures for inpatient care compared with care rendered outside of the hospital. This trend had been under way for the past decade, but the first year of PPS saw a somewhat larger shift than in the years immediately preceding its implementation.

The adoption of Medicare's PPS occurred as other third-party payers were also restructuring hospital reimbursement, and it appears to have hastened the adoption of various prospective payment methods by other payers. While one state used the DRG system for setting hospital payment for all payers before Medicare adopted it, interest in its use has grown since 1983. Eight state Medicaid programs have adopted DRGs for inpatient hospital payment. Similarly, several Blue Cross/Blue Shield plans are experimenting with this system for paying hospitals; seven now pay hospitals using some variation of Medicare's DRGs. Commercial insurers have generally used other methods to limit per-hospital inpatient payments.

ORGANIZATION OF THIS REPORT

Chapter 1 of this report describes the prospective payment system and the other changes occurring in the organization, financing, and delivery of health care. In Chapter 2, changes in the use of inpatient services are examined and the responses by hospitals to financial incentives are described. Chapter 3 discusses changes in the use of inpatient hospital care and the implications of PPS for health care technology. Chapter 4 describes the distribution of Medicare inpatient revenues brought about by PPS and the current financial condition of the hospital industry. Chapter 5 describes potential effects of PPS for Medicare beneficiaries and discusses beneficiary and provider perceptions of quality and access to care under PPS. Chapter 6 describes the use of DRG-based reimbursement by other public and private health insurance plans and efforts by commercial insurers to lower billings to their insureds for inpatient care.

Chapter 1

Medicare Prospective Payment and the American Health Care System

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Medicare Prospective Payment and the American Health Care System

Implementation in 1983 of Medicare's prospective payment system (PPS) for inpatient hospital care increased pressure for substantial change in the nation's health care system. Because Medicare accounts for about 40 percent of all inpatient hospital expenditures, changes in reimbursement policy could significantly affect hospitals and health care generally. Recognizing this potential, the House Appropriations Committee asked the Prospective Payment Assessment Commission (ProPAC) to analyze the effects of Medicare's PPS on the nation's health care system and to present findings in an annual report.[1]

To the extent possible at this early stage, ProPAC has examined the potential consequences of this new Medicare payment policy on inpatient care as well as on the organization, financing, and delivery of health care. Though an overall assessment of PPS may not be possible for a few more years, there is evidence that the new payment system has affected health care. ProPAC will continue to monitor changes in the nation's health care system related to PPS and will report its findings to the Congress annually.

PUBLIC AND PRIVATE SECTOR EFFORTS TO RESTRAIN GROWTH OF HEALTH CARE SPENDING

Between 1965 and 1984, national health care expenditures rose from $35.9 billion to $387.4 billion. Because growth of health care spending exceeded growth of the nation's overall economy, health care expenditures accounted for 10.6 percent of gross national product (GNP) in 1984 compared with 3.9 percent of GNP in 1965.[2] In the early 1980s, health care spending growth was particularly rapid. Between 1980 and 1982 alone, health care spending rose 30 percent. Medicare expenditures for inpatient hospital care rose from $4.2 billion in fiscal year 1970 to $39.7 billion in 1984. The rapid growth in national health care spending and in Medicare expenditures occurred because of:

- Higher input prices (due to general inflation and the more rapid rise in medical care prices),
- Greater use of services per patient,
- Increased intensity of services, and
- Growth in population.

Medicare inpatient spending rose faster than total health care spending because the population over age 65 has grown more rapidly than the population under age 65 in recent years, and benefits of the Medicare program have been expanded. Between 1982 and 1983, a significant portion of the increase, about 16 percent, can be attributed to greatly expanded use of resources for patients with similar conditions.

Both the public and private sectors are introducing substantial changes in response to rising health care costs. In the private sector, business and labor recognized that higher health insurance expenditures caused by the growing level of health care spending lowered profits and reduced the capacity of firms to

provide wage increases. As a result, changes in private financing of health services have accompanied changes in the public sector.

The enactment of PPS follows movement away from retrospective, cost-based reimbursement over the past ten years. The Social Security Amendments of 1972 authorized the Department of Health and Human Services (HHS) to set prospective limits on costs. Using this authority, HHS set limits on routine per-diem hospital inpatient operating costs. The Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) extended these prospective cost limits to total inpatient operating costs.

In addition to adopting an effective cost-containment measure, the Congress sought to change the incentives for hospitals by reforming Medicare payment policies. Under retrospective, cost-based reimbursement used by Medicare before the enactment of PPS, hospitals had only limited incentive for efficiency. Through the implementation of prospective payment, the Congress sought to place hospitals at risk for inefficiency and to encourage a reduction in the cost of providing inpatient care by allowing hospitals to retain any surplus above the predetermined rate realized in providing care to Medicare beneficiaries.

In recent years, the private sector has also emphasized market incentives to control health care costs. Health maintenance organizations (HMOs) and similar financing and delivery arrangements use capitation to place health care providers at risk for the cost of unnecessary care and inefficiency. There have also been efforts to reduce unnecessary use of services through managed health care programs, such as preadmission certification and requiring a second opinion for certain surgical procedures. Preferred provider organizations (PPOs) offer discounted health care services for enrollees willing to obtain services from selected providers. In addition, through modifications in the design of traditional health insurance plans, the private sector has encouraged patients to become more cost-conscious.

The increased emphasis on market incentives in the delivery of health care has many potential advantages for improving efficiency. More experience will be required before definitive conclusions can be reached regarding the effect of competitive forces on access to and quality of health care.

CONCURRENT CHANGES AFFECTING THE DELIVERY OF HEALTH CARE

Besides health care financing reform, substantial changes in health care delivery have influenced the use of inpatient hospital care and total health spending. Advances in cataract lens extraction, for example, have made it possible to perform more surgical procedures on an outpatient basis, thus reducing the need for more expensive inpatient care. Other technologies, such as coronary artery bypass graft surgery, while improving the quality of medical care, have led to substantial increases in expenditures for health care.

In general, changing medical practice patterns have shifted the site of service away from inpatient hospital settings to settings outside of the hospital, including the home. While this trend has resulted in lower expenditures for inpatient hospital services, the long-run implications for total health expenditures, as well as for the quality of care, are unclear.

Reduced use of hospital care may also be attributable to improved health resulting from measures taken by individuals to prevent illness, such as changes in diet, exercise, and other habits. One study concluded that declines during the 1970s in three risk factors—cigarette smoking, hypertension, and serum cholesterol—could have contributed to the decline in mortality from coronary heart disease.[3]

RECENT TRENDS IN HEALTH CARE SPENDING

Growth in health care expenditures slowed significantly in the last three years, reflecting lower medical care price inflation as well as changes in the financing and delivery of medical care. Between 1978 and 1982, national health expenditures grew at an average annual rate of about 14.1 percent but the rate of growth has declined significantly since then. Expenditures increased by about 10.3 percent in 1983 and by about 9.1 percent in 1984. As a result of smaller increases in health care spending and rising GNP, in 1984 the proportion of GNP devoted to health care spending declined for the first time since 1977.

Medicare spending has also slowed since 1983, reflecting changes in health care delivery and early responses by providers to TEFRA and prospective payment. Expenditures from Medicare's Hospital Insurance (HI) Trust Fund in fiscal year 1985 were significantly lower than projected by the Department of Health and Human Services shortly after enactment of PPS. In June 1983, HHS estimated that expenditures for 1985 would reach $51.1 billion. Actual outlays for 1985 were $48.7 billion—almost 5 percent lower than the earlier estimate. Between 1983 and 1985, spending grew at an average annual rate of 11.8 percent, instead of the expected 13.6 percent.[4]

KEY FEATURES OF MEDICARE'S PROSPECTIVE PAYMENT SYSTEM

The prospective payment system:

- Pays only for inpatient hospital care,
- Pays hospitals a fixed amount or price for each discharge, and
- Prospectively sets prices.

Medicare patients are assigned to one of 468 diagnosis-related groups (DRGs) for payment purposes, depending primarily on principal diagnosis.[5] Some assignments to DRGs are based, in part, on surgical procedure, age, sex, and other clinical service information. Each DRG corresponds to a weight that reflects the relative resource use for patients in that DRG. A hospital's payment for a discharge is the product of the DRG weight times a standardized amount, plus applicable adjustments.

Rates are set before the start of each Federal fiscal year by applying an update factor to the previous year's rates. The update factor reflects changes in the prices of goods and services purchased by hospitals, changes in hospital productivity, technological advances, quality of care and the long-term cost-effectiveness of services. About a month before each Federal fiscal year begins, the updated standardized amounts, together with changes in DRG weights and other changes to PPS, are published in the *Federal Register*.[6]

During a three-year transition period, which began on October 1, 1983, the portion of each hospital's payment based on the hospital's own costs gradually declines; the portion of the rate based on regional and national average costs increases. Hospital rates will be entirely determined on a national basis without a regional or hospital-specific component beginning with Federal fiscal year 1987. The precise timing of the implementation of national rates is currently being reviewed by the Congress. Even after the transition, separate rates will prevail for urban and rural hospitals, with an adjustment for differences in area wages.

Payment adjustments are made for unusually costly or long-stay cases (outliers) and for indirect medical education costs. In addition, the Congress is considering adjusting rates for hospitals that serve a disproportionate share of low-income patients. Hospitals receive additional payments for capital costs, the direct costs of medical education programs, kidney acquisition costs, and Medicare bad debt.

A more thorough description of the prospective payment system, as well as a discussion of issues surrounding the implementation and maintenance of DRG-based payment, can be found in ProPAC's first annual report.[7]

The Prospective Payment Assessment Commission

The Social Security Amendments of 1983 (Pub. L. 98-21), which enacted the prospective payment system, also established the Prospective Payment Assessment Commission to advise the executive and legislative branches on maintaining and updating the PPS. The 15 members of the Commission have broad experience in health care delivery, financing, and research. They provide independent advice to the executive and legislative branches on PPS. Specifically, the Commission was created to:

- Recommend annually to the Secretary of the Department of Health and Human Services the appropriate percentage change in Medicare payments for inpatient hospital care, called the "update factor," and
- Consult with and recommend to the Secretary of the Department of Health and Human Services necessary changes in diagnosis-related groups, including advice about establishing new DRGs, modifying existing DRGs, and changing the relative weights of the DRGs.

Peer Review Organizations

Although the Peer Review Organization (PRO) program was not created as a part of the prospective payment system, the program was given responsibility for review of inpatient care under PPS.[8] Each hospital under PPS must contract with a PRO for review of Medicare inpatient services. The PRO reviews inpatient stays primarily on a retrospective basis and focuses on appropriateness of admissions, validity of DRG assignment, and other specific aspects of inpatient care.

Medicare discharges are also reviewed by PROs for quality of care provided on an inpatient basis. For the most part, quality review focuses on the appropriate use of inpatient care rather than on the outcome of that care. PROs are not responsible for review of services provided to beneficiaries after they are discharged from a hospital, unless they are readmitted to an acute care hospital.

HOSPITAL RESPONSES TO THE PROSPECTIVE PAYMENT SYSTEM

The effects of prospective per-discharge payment can be distinguished from the effects of particular features of PPS. In general, prospectively set rates for each discharge encourage hospitals to lower the cost of each episode of inpatient care and to increase the use of profitable services. Medicare policies set by the Administration and the Congress determine the level of payment for each discharge and the way that discharges will be classified for payment purposes.

Incentives and Responses Expected from Prospective Per-Discharge Payments

The incentive to lower per-discharge costs occurs because hospitals must absorb costs in excess of the established DRG payment. They realize a surplus if the payment exceeds their costs. Hospitals may achieve lower PPS expenses per discharge by:

- Reducing the length of stay,
- Shifting some services to locations outside of the hospital,
- Reducing labor and nonlabor inputs, and
- Substituting less expensive inputs for more expensive inputs (e.g., capital for labor).

Faced with lower occupancy rates and payments that do not increase to compensate for them, hospitals now have greater incentives to seek a better balance between their capacity and their census. Hospitals could reduce unused capacity by attracting additional patients, by using it to provide other services not subject to PPS, and by closing unused beds.

Under PPS hospitals also have an incentive to specialize in more profitable services. They could, for example, increase admissions in DRGs where payments are likely to exceed costs. They could also eliminate unprofitable services.

Effects of Specific PPS Policies

Payments to hospitals under PPS depend on the program's policies in two broad areas: payment amounts and patient classification. Payment amount policies determine the level of payment for each discharge. Patient classification policies determine which cases will receive similar payment.

Payment amount policies will influence the financial position of hospitals through their effects on the level and the distribution of payments to hospitals. In particular, the adequacy and equity of inpatient hospital payments depend on:

- The level of the standardized amounts,
- The annual increase allowed in these amounts through the update factor,
- The relative weights for each DRG, and
- Adjustments for differences in hospital costs unrelated to efficiency, such as the indirect costs of medical education.

Several policy features of PPS were designed to reduce some of the rigidities of per-case payment. Unchanged, PPS—or any per-discharge payment system—could discourage the development and diffusion of new technology because the existing payment amounts do not include costs of their use. Without the ability to adapt to changes in medical care, access to some services could be limited. PPS policies in two areas can be modified to accommodate changes in medical care:

- Patient assignment to DRGs, and
- Adjustments to DRG classification and weights to incorporate changes in medical technology and practice.

Effects of Federal Budget Policy

The effect of PPS on health care could be overshadowed by efforts to reduce the Federal deficit. The process established by the Gramm-Rudman-Hollings Act may lead to lower rates of increase and possibly to reductions in inpatient hospital payments. This legislation sets annual targets for reductions in the Federal deficit. If these targets are not met, Medicare payments to providers, including hospitals, could be lowered by 1 percent in 1986 and by 2 percent in the years between 1987 and 1991.

The stringency of Federal budget policy sharpens the issue of the equity of the distribution of payments under PPS. Some groups of hospitals fare better than others, but the reasons for differences in hospital costs are not entirely understood. Reducing rates may cause severe hardship for some groups of hospitals because their higher costs are the result of factors beyond their control. Thus, the consequences of fully national payment rates and other features of the payment system need further examination. In the year ahead, the Commission will continue to analyze the equity of the distribution of payments to avoid unintentional hardship for certain groups of hospitals.

Expected and Observed Effects of Prospective Payment

Many changes were predicted for health care and for hospital services at the time that PPS was enacted. Some of the predicted changes have occurred; for example, length of stay has declined and hospitals have taken steps to lower their expenses. Contrary to expectations, there was a large decline in admissions for the Medicare population—a larger percentage decline than occurred for the non-Medicare population. The expectations for health care after implementation of PPS and observed responses are summarized in Table 1. The remaining chapters of this report describe these changes more fully.

Table 1.—Expected and Observed Consequences of the Prospective Payment System

Health System Feature	Expected Response	Observed Response
Average length of inpatient stay	Reduction	Reduction
Admissions	Increase	Reduction
Hospital employment	Reduction	Reduction
Medical residents and interns	Increase	Uncertain
Increases in hospital costs		
Increases in cost per day	Uncertain	Higher
Increases in cost per admission	Lower	Lower
Increases in cost per capita	Uncertain	Lower
Capital spending	Increase	Increase
Hospital financial condition	Uncertain	Improved
Coding and case complexity	Increase	Increase
Surgery	Increase	Increase
Adoption of technology	Reduce	Uncertain
Need for post-discharge services	Increase	Increase
Hospital management	Improved	Uncertain
Quality and access	Uncertain	Uncertain

ASSESSING THE RELATIONSHIP BETWEEN THE PROSPECTIVE PAYMENT SYSTEM AND CHANGES IN THE HEALTH CARE SYSTEM

Provider responses to the incentives created by PPS will certainly lead to significant changes in the nation's health care system, but separating the effects of PPS from similar private sector changes will be difficult. The incentives of these new financing arrangements, as well as their anticipated effects, are similar to those of PPS. Depending on the volume of privately insured patients, the changes in reimbursement by other payers could, for many hospitals, have a more substantial effect than Medicare's PPS.

There has been too little experience with the system for many changes to be reflected in currently available data. Although hospitals began receiving payment under PPS more than two years ago, most hospitals have not been under it for that long. Consequently, the effects of changes that providers have implemented in response to the system's incentives are just beginning to be seen. Further changes in health care delivery are anticipated as fully national rates are put in place. (The current schedule does not call for fully national rates before 1987.)

In addition, data are not currently available to assess many PPS effects. Medicare inpatient hospital claims data have not been routinely linked with claims for other physician's services and other care that would be necessary to estimate the shift of services to outpatient settings. Data are not collected on Medicare beneficiaries using many post-discharge services, such as nursing home care (except for skilled nursing facility services covered by the program). Furthermore, because PPS was implemented nationwide (except for the four initial waiver states, two of which have retained their waiver) comparison with unaffected hospitals is limited.

Changes in the Medicare program itself have encouraged changes in the use of services outside of the hospital similar to those anticipated as a result of PPS. The expansion of home health care benefits in 1980, for example, was followed by significant increases in the number of beneficiaries who received post-discharge care through a home health agency. Likewise, the hospice benefit encourages provision of care outside of the hospital to terminally ill patients.

In addition to changes in insurance reimbursement and coverage, other forces, like the rapid growth in the number of practicing physicians, are influencing the evolution of health care delivery. These simultaneous changes interact with the effects of PPS and make it difficult to isolate the contribution of Medicare's new payment policy.

Whether Medicare beneficiaries or other hospital inpatients experience a difference in access to or the quality of care depends on the steps hospitals take in response to PPS incentives. Some of these steps could reduce access to or quality of health care, while others could lead to improvements. For example, elimination of certain services could lower the quality of care; specialization could enhance it. Similarly, some responses could increase total expenditures while others could reduce them, making it difficult to estimate the net effect on expenditures at this time.

Without widely accepted outcome measures, initial assessments of the effects of PPS on quality must be based on limited data. Neither structural measures of quality—the characteristics of health care providers—nor measures of the process of care are well suited for evaluation of a changing system. Changes in both the structure and the process of care are generally expected, but how these changes will affect health outcomes is unclear.

Notes to Chapter 1

1. U.S. Congress, House of Representatives, Committee on Appropriations, *Committee Report Accompanying H.R. 6028* (Washington, DC: U.S. Government Printing Office, July 26, 1984).

2. For a complete discussion of trends in national health expenditures, see Katharine R. Levit, Helen Lazenby, Daniel R. Waldo, and Lawrence M. Davidoff, "National Health Expenditures, 1984," *Health Care Financing Review* 7(1):1-35, Fall 1985.

3. Michael Rowland, Robinson Fulwood, and Joel C. Kleinman," Changes in Heart Disease Risk Factors," U.S. Department of Health and Human Services, National Center for Health Statistics, *Health, United States, 1983*. DHHS Pub. No.(PHS) 84-1232 (Washington, DC: U.S. Government Printing Office, December 1983).

4. Alternative II-B estimate of fiscal year 1985 expenditures from U.S. Department of Health and Human Services, The Board of Trustees, Federal Hospital Insurance Trust Fund, *1983 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund*. (Washington, DC: June 1983).

5. There are 470 diagnosis-related groups used under PPS, but two are not used for payment. DRGs 469 and 470 are used for cases that cannot be assigned to valid DRGs. Proposed regulations for fiscal year 1986 contain the addition of one more DRG and would bring the total to 471.

6. Current DRG weights, standardized amounts, and other components of rate calculations for fiscal year 1986 can be found in 50 FR, 35646.

7. Prospective Payment Assessment Commission, *Report and Recommendations to the Secretary, U.S. Department of Health and Human Services, April 1, 1985* (Washington, DC: U.S. Government Printing Office, April 1, 1985).

8. The Peer Review Organization program was created by the Tax Equity and Fiscal Responsibility Act of 1982 (Pub. L. 97-248). The Social Security Amendments of 1983 (Pub. L. 98-21) gave PROs responsibility for review of inpatient care under PPS.

Chapter 2

Changes in Hospital Utilization and Hospital Management

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Inpatient utilization, measured by admission rates and average lengths of stay, is decreasing for all age groups. This trend reflects advances in technology, increased competition among providers, and reactions to changes in health care financing by the government, third-party insurers, and employers. These influences encourage changes in physician practice patterns and more efficient delivery of care. Changes in the organization, financing, and delivery of health care were discussed in Chapter 1.

With the declining demand for inpatient services, the survival of many hospitals may depend on their ability either to attract patients from competing hospitals or to develop new sources of revenue. Consequently, hospitals are adopting new strategies in an effort to remain prominent entities in the provision of health care. This chapter describes changing patterns of hospital utilization, and the strategies hospital administrators have adopted in response.

DECLINING USE OF INPATIENT CARE

In recent years, hospital admissions have declined for both the elderly and nonelderly populations. Admissions for the population under 65 years of age began to decline significantly in 1981, as seen in Figure 1. Prior to that time, the trend had been one of net increase, although admissions per 1,000 for all adults have fluctuated up and down from year to year.

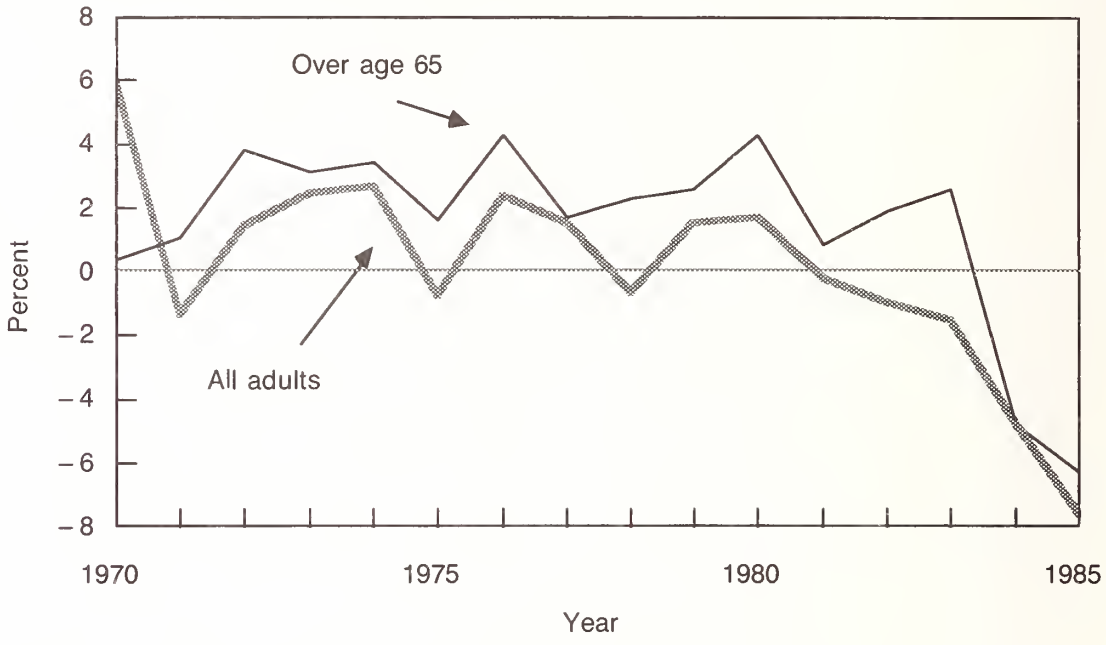
In the over 65 population, admissions per 1,000 had increased steadily until 1984, although the rate of increase slowed dramatically in 1981—0.9 percent compared to 4.3 percent in 1980. In 1984, the number of admissions for the over 65 group declined for the first time.

The causes of the admissions decline are not known. Hospital admissions are sensitive to fluctuations in the economy (e.g., lower admissions follow higher unemployment), to changes in medical practice, and to the comprehensiveness of health insurance coverage.[1] No direct causal relationship, however, has been established between these or other factors and the recent decreasing rate of admissions. Utilization review conducted by PROs has probably contributed to the decline in admissions for Medicare beneficiaries.

While the average length of stay (LOS) has also declined steadily since 1970, PPS incentives for shorter inpatient stays have caused additional reductions. The decline has been much faster for the population aged 65 and over, as Figure 2 shows, with the most dramatic drop for the over 65 population occurring in 1984, when hospitals were beginning to receive payment under PPS. According to a recent study, 78 percent of admitting physicians reported their hospitals had encouraged early patient discharges. PPS was cited by 70 percent as the reason for this pressure.[2]

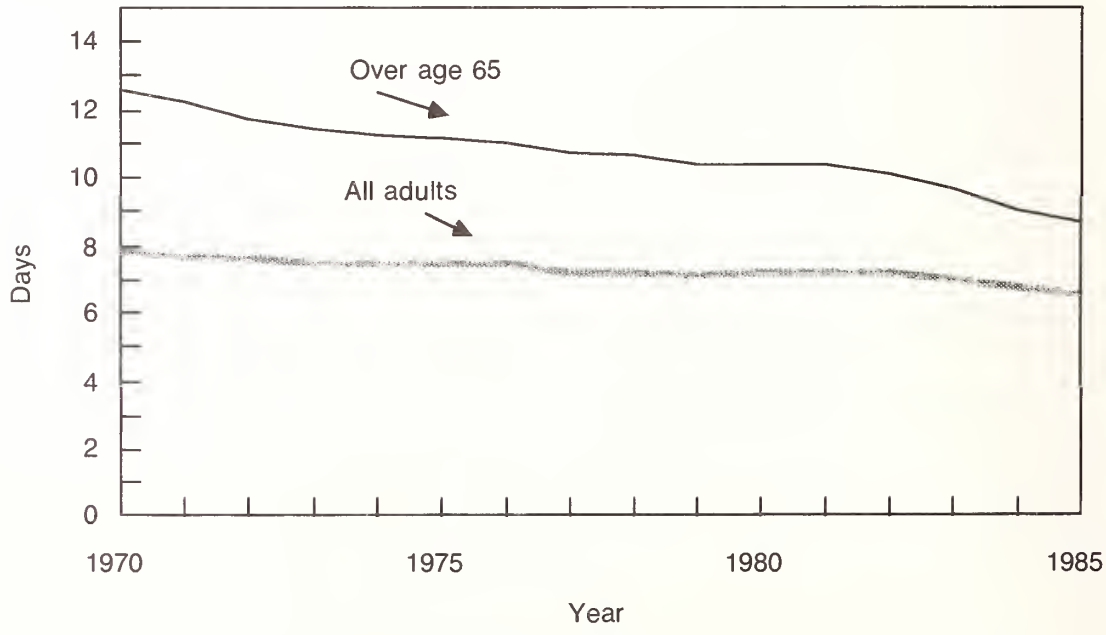
As a result of declining lengths of stay and fewer admissions, occupancy rate for community hospitals declined from 76 percent in 1981 to 69 percent in 1984.[3] Most of the decline was due to fewer inpatient days. The number of beds in community hospitals, which increased by 1.4 percent, further reduced the occupancy rate.

Figure 1.—Percent Change in Hospital Admissions, Per 1,000 Population, 1970-1985



SOURCE: Admission data are from the American Hospital Association National Panel Survey. Data for 1985 are estimated, based on the first ten months of actual compared to the first ten months of 1984.
Population data from the U.S. Department of Commerce, Bureau of the Census *Statistical Abstract of the United States*, 1985.

Figure 2.—Average Hospital Length of Stay, 1970-1985



SOURCE: Admission data are from the American Hospital Association National Panel Survey. Data for 1985 are estimated, based on the first ten months of actual compared to the first ten months of 1984.
Population data from the U.S. Department of Commerce, Bureau of the Census *Statistical Abstract of the United States*, 1985.

Whether these current trends in declining use of inpatient hospital services reflect changes in the quality of care has become a primary concern of providers, insurers, and policy analysts. Access to and quality of health care are discussed in Chapter 5.

CHANGES IN CASE MIX

While utilization of inpatient care has declined, the case-mix index of hospitals, which uses DRGs to measure the relative use of resources per admission, has increased. By the middle of fiscal year 1985, the case-mix index was 11.3 percent higher than its 1981 level.[4] The increase appears to have leveled off, however. Substantial increases were observed during the quarter in which hospitals first came under PPS, and increases continued for several quarters. But preliminary data show little change in the average case-mix index in the first half of fiscal year 1985.

There are a number of reasons for the increase. Hospitals are more attentive to accurate coding and documentation because correct PPS payment depends on accurate patient records. At most hospitals, coding changes unrelated to changes in patient conditions account for most of the observed case-mix increase in the period immediately following implementation of PPS.

Another cause of the increased case mix index is the increased proportion of Medicare discharges in higher weighted surgical DRGs. Between 1981 and 1984, the portion of Medicare discharges in surgical DRGs rose from 21 percent to 27 percent. The weights for surgical DRGs are generally higher than for medical DRGs. A trend toward more surgery for elderly patients has been observed for discharges that occurred much earlier than the implementation of PPS.[5] This makes it difficult to evaluate the influence of PPS on surgical volume at this early stage.

Some of the increase in the case-mix index probably results from changes in the characteristics of hospitalized patients as procedures and patients requiring fewer resources are moved to alternative settings. "Real" case-mix change occurs when relatively uncomplicated cases are shifted to outpatient settings, and the patients who remain inpatients use more resources, on average, than in earlier periods. Patients are being discharged earlier to home health services or skilled nursing facilities. Certain surgical procedures—lens implants and knee surgery, for example—are increasingly being done in the outpatient department. In 1984, outpatient surgery represented about 25 percent of surgical procedures performed on all patients, up from 14 percent in 1980.[6]

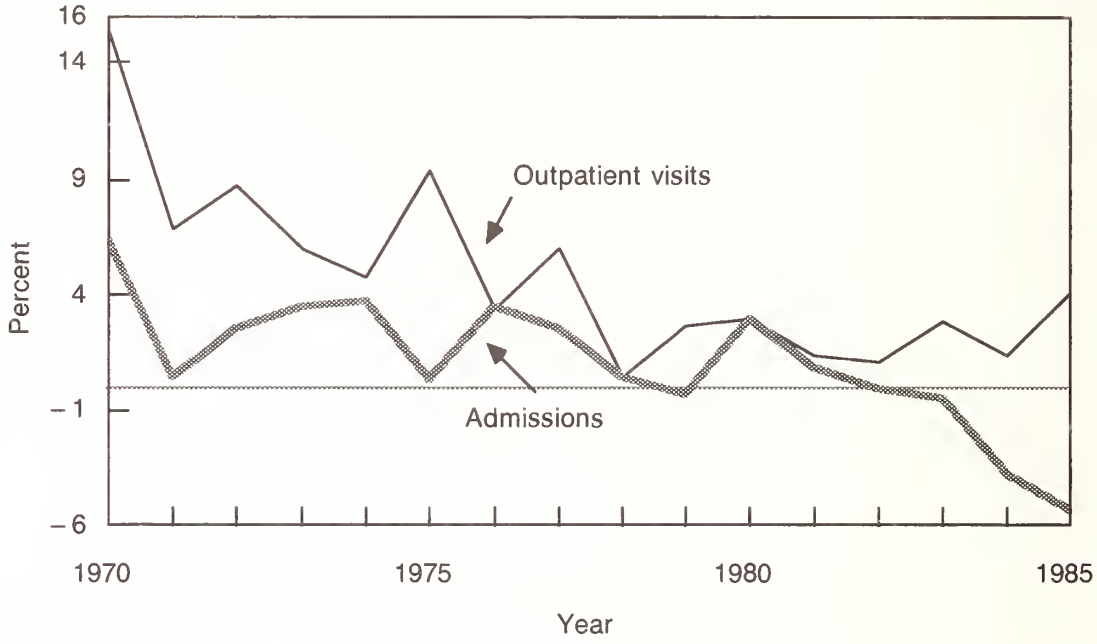
INCREASED USE OF OTHER HEALTH CARE SERVICES

Decreasing utilization of inpatient care presents new challenges to hospitals. They must develop alternative sources of revenue to replace the lost inpatient revenue. These include creating new uses for the underutilized beds or reducing the number of licensed beds. Expanded outpatient departments and post-discharge care (home health services and skilled nursing facilities) are among the most popular programs hospitals are implementing to recoup lost inpatient revenues.

An ever-increasing proportion of hospital services is being provided on an outpatient basis. This trend has been encouraged by technological advances that allow services previously delivered only in an inpatient setting to now be performed on an outpatient basis. Since 1982, the increase in the portion of hospital services provided on an outpatient basis has been due both to declining admissions and to growth in outpatient visits (see Figure 3).

Hospitals now provide a broader range of services. In 1980, 72 percent of all hospitals provided ambulatory surgery, compared with 91 percent in 1984. The proportion of hospitals with home health care services more than

Figure 3.—Percent Change in Hospital Admissions and Outpatient Visits, 1970-1985



SOURCE: Admission data are from the American Hospital Association National Panel Survey. Data for 1985 are estimated, based on the first ten months of actual compared to the first ten months of 1984.

doubled in that period, to a total of 23 percent. The proportion of acute care hospitals providing inpatient long-term care services increased from 10 to 16 percent. The percent of hospitals providing hospice services increased to 10 percent in 1984 from 6 percent in 1980.[7]

CHANGES IN INPATIENT COSTS

In recent years, the rate of increase in total hospital expenses has slowed substantially. The rate of increase in capital expenses has also diminished, but the drop has been far less dramatic (see Table 2). This may be partly due to Medicare policy, which reimburses capital costs on a pass-through, reasonable cost basis. In addition, capital expenses are subject to the fluctuating interest rates on borrowed money.

On a per-capita basis, hospital expenses have slowed even faster, reflecting less use of inpatient hospital services. Growth in hospital expenses per admission has not declined as much, probably because of the lag in adjusting expenses in response to the sharp drop in admissions. As inpatient days decline, short-term, fixed costs are spread over fewer days, resulting in higher costs per day. In the long-term, however, hospitals can reduce these costs by reducing idle capacity.

After accounting for inflation, the increase in inpatient hospital expenses per admission for the first half of 1985 increased at its historical average rate, although this indicator must be interpreted with caution. The measure, often referred to as "service intensity," rose 1.7 percent in 1984, and 3.9 percent through the first half of 1985, compared to a 3.4 percent historical average. Because it is measured as a residual, intensity often fluctuates greatly on an annual basis, as other factors change. The increase in intensity for 1985 may simply be a result of the large drop in admissions, and may level off over time as hospital expenses are reduced to reflect the admissions decline. Other information raises doubts about interpreting the current

intensity measure as indicative of service increases. Some data suggest that, in addition to the decline in hospital days, patients are receiving reduced quantities of certain ancillary services per stay. (See Chapter 3.)

Table 2.—Change in Inpatient Hospital Expenses, 1976-1985 (In Percent)

	Total Expenses	Capital Expenses	Inpatient Expense Per Capita	Inpatient Expense Per Day	Inpatient Expense Per Admission
1976	18.7%	NA%*	17.5%	15.0%	14.8%
1977	15.2	18.2	14.0	14.3	12.3
1978	12.3	15.8	11.1	12.1	11.8
1979	13.3	13.7	12.0	11.5	10.4
1980	16.8	15.0	15.4	12.9	13.5
1981	18.4	20.1	17.2	16.9	17.4
1982	15.6	20.5	14.4	16.2	15.5
Average increase 1976-1982	13.6	17.2	12.6	12.3	11.8
1983	9.5	16.4	8.5	12.4	10.1
1984	3.5	17.1	2.5	13.3	7.5
1985†	3.5	12.6	2.6	11.5	9.4
Average increase 1983-1985	5.5	15.4	4.5	12.4	9.0

* NA = Not available.
† Estimate based on first ten months of 1985 compared to first ten months of 1984.

SOURCE: The American Hospital Association National Panel Survey.

Because labor costs are approximately 60 percent of the total costs per admission, one of the most obvious methods to lower costs is to reduce staffing.[8] Labor reductions usually follow decreasing admissions, as the hospital finds itself overstaffed, or with a staff mix that is no longer appropriate for its case mix.

The total number of full-time equivalents (FTEs) is declining, but inpatient FTEs per admission continue to rise (see Table 3). This occurs because staff reductions lag behind the decline in admissions. Nevertheless, reductions in employment caused the rate of increase in FTEs per admission to slow substantially in 1984 and 1985. A long-run trend of increased use of part-time employees has continued in recent years. Although full-time personnel declined an average of 1.6 percent a year between 1983 and 1985, part-time employment grew at an average of 0.1 percent. This may reflect the acceptance of part-time status by staff who had previously been employed full time.

In reducing staff, hospitals have had to be sensitive to negotiations with employees and their representatives. Nurses' unions now stress job security and retraining over large wage increases in contract talks.[9] Nurses also are calling for retraining programs to fill perceived staffing shortages in some areas of patient care with nurses who otherwise might be laid off. Demands continue to be made for more comprehensive fringe benefits, although wage increases are being accepted in place of larger benefits.

Table 3.—Change in Hospital Employment, 1971-1985 (In Percent)

	Full-Time Equivalents	Inpatient Full-Time Equivalents	Inpatient Full-Time Equivalents Per Admission
1971	2.6%	2.2%	1.7%
1972	3.7	3.2	0.6
1973	3.3	2.7	−0.8
1974	4.5	4.1	0.4
1975	5.0	4.4	4.1
1976	6.1	5.8	2.3
1977	5.1	4.6	2.1
1978	3.7	3.2	2.8
1979	3.5	3.3	0.7
1980	4.7	4.5	1.6
1981	5.4	5.1	4.3
1982	3.7	3.4	3.4
Average increase 1971-1982	4.3	3.9	1.9
1983	1.4	0.8	1.4
1984	−2.3	−3.5	0.2
1985*	−3.0	−5.0	1.0
Average increase 1983-1985	−1.3	−2.6	0.8

* Estimate based on first ten months of 1985 compared to the first ten months of 1984.

SOURCE: The American Hospital Association National Panel Survey.

MANAGEMENT AND MARKETING STRATEGIES OF HOSPITALS

Decreasing utilization, as well as the implementation of PPS and other cost constraints, has created a new competitive arena for hospitals. In addition, both public- and private-sector payers have created incentives to encourage competition and thus help control costs. The four main incentives are to:

- Reduce costs per case,
- Specialize in selected services,
- Shift services to alternative sites of care, and
- Increase the volume of profitable services.[10]

Hospitals have responded to these incentives by developing new management strategies. The extent to which these strategies are adopted throughout the industry remains to be seen. Moreover, it is unclear whether their implementation will guarantee financial viability for all participating hospitals. In the short time PPS has been in effect, however, these incentives and the resulting strategies have contributed to more efficient health care delivery. Analysts will continue to monitor, and ProPAC will present in future reports, how these strategies have actually changed the delivery of care, and what other modifications are being developed to meet the challenges in the industry.

Strategies to Reduce Costs Per Case

The strongest incentive which PPS and the other payers encourage is to reduce costs per inpatient case. This is accomplished primarily through increasing efficiency by lowering the costs of inputs and the number of inputs used to treat each patient.

Reducing Costs of Inputs.—Among the strategies to lower the costs of inputs are reducing the number of beds, employing horizontal integration, and contracting for services.

Reducing the number of beds can decrease fixed and marginal costs over the long-term.

Horizontal integration—the merger or acquisition of organizations providing similar services—can enhance efficiency through economies of scale. Groups of hospitals are also using shared services contracts to achieve this goal.

Contract management, which provides services at a fixed, negotiated price, is another cost-reduction measure. The services most commonly secured by hospitals are: administrative, nursing, housekeeping and laundry, food preparation, and laboratory.

Reducing the Number of Inputs Per Admission.—Some strategies are aimed specifically at reducing the number of inputs per admission. The number of ancillary tests can be decreased, or less-costly technology substituted. Excessive testing can be constrained through in-house utilization review and preauthorization treatment programs. Some hospitals are using published Medicare DRG data to set guidelines for evaluating a patient's length of stay.

General Strategies.—Other kinds of strategies more generally influence both costs per input and numbers of inputs per admission. These are related to staffing, management information systems, product line management, physician profiles, and educational programs for physicians and patients.

Changing the staffing mix and making overall reductions in the number of staff per patient are helping hospitals lower staffing costs. (These reductions are further encouraged by Medicare paying for capital costs on a pass-through basis, which creates a distorted incentive to substitute capital for labor as long as the substitution decreases operating costs.)

The installation or upgrading of management information systems in both accounting and medical records departments is becoming more widespread. These systems monitor appropriate coding, track the processing of cases, and follow case-mix changes.

There is a also a trend toward product line management, where individual managers are assigned to several DRGs or a Major Diagnostic Category. Managers are made largely responsible for coordinating across all departments such activities as planning, accounting, marketing, distribution, and purchasing. Common areas of product line development are: pediatric, medical/surgical, psychiatric, obstetrics/gynecology, integrated health systems, and hospice services.

In addition, physician profiles are being used more extensively. They describe treatment patterns of staff physicians and permit comparisons of similar cases among physicians. The profiles detail types of cases treated, average costs, procedures ordered, and length of stay per case.

Educational programs to promote cost-effectiveness have been expanded for physicians. These include "costs rounds" to discuss the cost-effectiveness of treatment modalities. Patient education programs are being created that encourage self-management, where patients assume more responsibility for their own care. Self-management permits same-day admissions for surgery as well as earlier discharges.

Strategies to Specialize in Selected Services

PPS promotes increased hospital specialization of services by making hospitals more aware of the services they can provide efficiently and profitably. If a hospital specializes in treatments that demand complex technology and intensive resource use, it may be able to provide that treatment more efficiently, because marginal costs of utilization decrease with volume increases. In particular, hospitals may seek admissions in DRGs that generate payments exceeding the costs of treatment. Savings may be achieved by discontinuing selected services, as hospitals identify "loser" DRGs for which the costs of treating patients tend to be more than the payment.

Winners and losers may vary from institution to institution. To the extent that hospitals can complement one another in the services offered, specialization may become more pervasive, and some services may be discontinued because they are unprofitable. Alternatively,

hospitals may determine that discontinuing certain services would increase costs for the remaining services and limit community access to those services. In that case, they may develop innovative ways to provide those services.[11]

The creation of special programs and centers of excellence where hospitals perceive a market niche are among the strategies to achieve specialization. These activities are often the result of demographic surveys, which are used to identify areas where expertise is needed. In addition, multihospital chains or networks are developing regional services, where separate facilities within a region are responsible for such activities as administration, laboratory and X-ray services (including nuclear medicine), food services, and housekeeping.

Strategies to Shift Services to Alternative Sites of Care

In an effort to maximize revenue, hospitals may shift some services formerly provided during an inpatient stay to alternative settings. Because the DRG payment system is limited to care in the inpatient setting, additional revenue may be obtained for care provided in other settings. These sites include outpatient clinics, outpatient surgery departments, emergi-centers, diagnostic centers, skilled nursing homes and long-term care facilities, dialysis centers, hospices, and home health care.

This strategy is especially attractive for hospitals that are vertically integrated (that is, when they have at least part ownership in the other facilities utilized in an episode of illness). Vertical integration not only allows hospitals to reduce length of stay for inpatients (thereby reducing costs), but also to capture the revenue flow for the patient from preadmission through post-discharge care.

Some cases requiring more resources, including extra days of care, may be transferred to another acute care hospital. If such transfers are motivated primarily by patient care considerations, this change can improve the quality of patient care. If, however, the motivation is primarily financial, transfers may lower the quality of care and lead to higher Medicare outlays. This is because the admitting hospital receives a per-diem rate and the receiving hospital receives the full DRG rate. It is not known yet whether the number of transfers has risen under PPS.

Strategies to Increase Utilization of Profitable Services

As inpatient occupancy has declined, hospitals have begun to search for ways to increase the number of admissions. Hospitals may, for example, attempt to admit Medicare patients who are categorized in the more "profitable" DRGs.

Advertising and marketing, especially when targeted toward a specific population, are important in the effort to increase utilization. Current hospital advertising budgets have risen by more than one-third since 1984. The average advertising budget is $64,000, and represents approximately 0.5 percent of hospital gross revenues.[12] Advertising and marketing strategies include tactics such as price competition, greater emphasis on patient relations, and promotion of a specifically designed public image.

Hospitals are also developing product service lines, which are services that have always been available, but are now offered as a package. These include an obstetric package with a congratulatory dinner for the parents, or a preventive health package that includes physicals, nutrition counseling, and exercise classes.

Hospitals are also adopting other strategies that promote convenience and alternative options for the patient. Among these are physician referral systems, whereby hospitals refer patients to doctors with admitting privileges who, in turn, admit these patients to the referring hospital. Other strategies include convenience-oriented feeder systems such as freestanding minor emergency centers and joint ventures with physicians in office buildings, diagnostic centers, freestanding laboratories, and skilled nursing facilities.[13] These joint ventures encourage physicians to share with hospitals the financial risk of providing care.

Other Management Strategies

Some strategies are part of an overall strategic plan to survive the competitive health care environment. These are primarily financial or organizational.

Financial strategies, besides those aimed at direct cost-savings in patient care, include refinancing of capital investments, seeking improved financing alternatives, and delaying equipment purchases and physical plant replacement. The more prudent debt managers are moving toward shorter-term, lower-cost, and higher-risk financing options—variable-rate demand bonds, tax-exempt bonds, and municipal bond insurance to enhance credit. Pooled financing arrangements are also being pursued. These enable a group of hospitals to seek financing together, which allows smaller or weaker hospitals to benefit from the credit advantages of larger or stronger providers.

Delayed replacement of equipment and physical plant results from closer scrutiny of investment decisions and facilities design. In addition, some hospitals have adopted a wait-and-see attitude while the PPS capital payment policy is being debated.

Organizational strategies include corporate reorganization and the development of joint ventures. Corporate reorganization allows nonprofit hospitals to develop for-profit services and for-profit hospitals to maximize their growth potential. Reorganization includes the formation of holding companies, foundations, and new venture companies.

Joint ventures are geared primarily toward increasing market share. The most popular projects are ambulatory care facilities, which represent 37 percent of current joint venture activity, according to a recent survey.[14] These include urgent care centers, ambulatory surgery centers, magnetic resonance imaging (MRI) and other diagnostic facilities. Other joint venture projects are HMOs and PPOs, medical office buildings, laboratories, laundries, and alcohol rehabilitation centers.

This survey also found that teaching hospitals, urban and suburban hospitals, and hospitals with more than 200 beds are more likely to be involved with joint ventures. Nonteaching hospitals, rural hospitals, and hospitals with fewer than 200 beds are less likely to engage in these activities. According to a another survey, most joint venture activity has been in the Pacific, Mountain, New England, and East North Central Census Divisions, and in cities with populations over 250,000.[15] Furthermore, multihospital chains are more likely to be involved in joint ventures like ambulatory care and alternative delivery systems. Independent hospitals are more likely to be involved in long-term care joint ventures.

Some hospitals are entering into businesses outside the health care industry—restaurants, hotels, and laundry services. The most popular of these new businesses, however, is insurance. Selling insurance provides hospitals with opportunities for greater control over costs and for directing the beneficiaries to their own facilities. Many proprietary chains now sell their own health insurance packages, issued through insurance companies bought by the chains.[16]

EFFECTS OF PPS ON NON-PATIENT CARE HOSPITAL ACTIVITIES

Hospitals have other goals besides providing health care to individuals. They also provide community services and learning environments for doctors, nurses, technicians, and other health care personnel, as well as encourage clinical and technological research.

The effect of PPS and other cost-constraining programs on medical education and clinical research is not yet known. PPS pays direct teaching costs, including residents' salaries. To offset other undefined costs connected with teaching, an indirect teaching adjustment is included in the DRG payment. Some people believe this adjustment is much higher than necessary and that it redistributes substantial funds to teaching hospitals at the expense of nonteaching hospitals.[17]

The direct and indirect teaching payments together encourage hospitals to add residents to their teaching programs. However, patients seen in teaching hospitals do cost more per case—sometimes more than the DRG rate and the allowance for indirect medical education expenses. The overall impact of PPS on teaching

hospitals and medical education, therefore, is not obvious.

The impact of PPS on clinical research is also uncertain. Medicare has always been prohibited from directly paying for clinical research.[18] There is some evidence, however, that the intermediary could not always distinguish between established treatment charges and those related to experimental treatment or procedures when processing a patient's bill.[19] Unless the intermediary determined through auditing that a service was associated with research, hospital expenses for such treatments were paid. Because the hospital now receives a fixed payment per admission under PPS, research that will raise the costs of treating the patient is discouraged. Conversely, research protocols that lower costs per case by using fewer ancillary services or shortening lengths of stay are encouraged.

According to recent interviews with ten leading venture capitalists and health care stock market analysts, funding of technology research is slowly being moved away from hospitals. Service companies (software programs and contracted services) and alternative delivery sites (physician-owned clinics) are performing research formerly done in hospitals.[20] A primary reason given for this trend was the uncertainty about how PPS will treat new technological developments.

Some hospitals are promoting research as a means to enhance their reputation and increase their market share. Funding for this research is being developed through joint ventures, including the hospital, physicians, and the manufacturer of the technology or drug as partners.[21] These examples show that more creative solutions for funding research may replace declining hospital-based research that is financed out of patient care revenues.

Notes to Chapter 2

1. American Hospital Association, Office of Public Policy Analysis, "Recession and Hospitals," Chicago, IL, 1980.
2. Margo Rosenbach and Jerry Cromwell, "Physicians' Perceptions About the Short-Run Impact of Medicare's Prospective Payment System," prepared with the support of the Health Care Financing Administration, under contract No. 500-83-0025, report to the National Opinion Research Center, Chicago, IL, November 1985.
3. American Hospital Association, *Hospital Statistics 1985 Edition* (Chicago, IL: AHA 1985), 7.
4. Grace M. Carter and Paul B. Ginsburg, "The Medicare Case Mix Index Increase: Medical Practice Changes, Aging, and DRG Creep," *Health Care Financing Review*, unpublished draft, November 1985.
5. Joseph Valvona and Frank Sloan, "Rising Rates of Surgery Among the Elderly," *Health Affairs* 4(3):108-109, Fall 1985.
6. ProPAC tabulations of data from the American Hospital Association Annual Surveys for 1980 and 1984, excluding hospitals in PPS waivered states.
7. ProPAC tabulations of data from the American Hospital Association Annual Surveys for 1980 and 1984, excluding hospitals in PPS waivered states.
8. Based on data from 1974 to August 1985 from the American Hospital Association National Panel Survey.
9. D. L. Yannish, "Nurses' unions lower sights on wages to make gains in non-economic areas," *Modern Healthcare* 15(23):76, November 8, 1985.
10. Much of the information presented in this section was collected from providers and industry consultants through telephone interviews conducted by ProPAC staff.
11. This has been the case in New Jersey. In a report on New Jersey's experience with DRGs, it was noted that: ". . .it quickly became apparent. . .that hospitals are unwilling to 'cut' services. . . .it was also felt by most administrators that 'things might be different in the future; the rules might change.' Thus, they were unwilling to drop services which are currently 'losers' when they might not be in the future." Health Research and Education Trust of New Jersey, *DRG Evaluation, Volume III: Case-Mix Classification, Data, and Management* (Princeton NJ:HRET, February 1984), 129.
12. Steven R. Steiber, Joseph A. Boscarino, and E. David Jackson, "Hospital marketing more sophisticated: survey," *Hospitals* 59(21):77, November 1, 1985.
13. It is estimated that hospitals now own 10 percent of all of ambulatory care centers in the U.S., a significant increase from the 4 percent owned in 1984. "Hospitals sponsor up to 10% of ambulatory centers," *Hospitals* 59(23):58, December 1, 1985.
14. Ernst & Whinney, *Health Care Joint Ventures: Survey Results*, 1985, 20.
15. 1984 Survey by American Hospital Association, as reported in "Joint Venture Interest Grows," *Medicine & Health/Perspectives* 39(44), November 11, 1985.
16. Humana, Hospital Corporation of America, National Medical Enterprises, and American Medical International all have their own companies. Universal Health Services is offering a program with Philadelphia American Life Insurance Co. as a joint venture partner. Voluntary Hospitals of America, a not-for-profit chain, is developing a joint venture with Aetna Life and Casualty. American Healthcare Systems has joined with Transamerican Occidental Life Insurance and Provident Life and Accident Insurance Company to market insurance programs.
17. A substantial reduction in the indirect teaching adjustment is part of the reconciliation package developed but not enacted by the Congress before the end of calendar year 1985.

18. Social Security Amendments of 1983 (Pub. L. 98-21) and the Deficit Reduction Act of 1984 (Pub. L. 98-369) gave the Department of Health and Human Services the power to assess "the safety, efficacy, and cost-effectiveness of new and existing medical procedures," providing similar research was not being done by private industry or the National Institutes of Health, and that the procedure being investigated "has the potential to be more cost-effective in the treatment of a condition than procedures currently in use with respect to such conditions" [Pub. L. 98-369, sec. 2313(c)(3)].
19. U.S. Congress, Office of Technology Assessment, *Medicare's Prospective Payment System: Strategies for Evaluating Cost, Quality, and Medical Technology*, OTA-H-262 (Washington, DC: U.S. Government Printing Office, October 1985), 133.
20. Survey conducted by Lewin and Associates for Pfizer, 1985.
21. C.A. Siegner, "CJH clinical research program acts as broker for product trials," *Modern Healthcare* 15(22):114-115, October 25, 1985.

Chapter 3

Changes in Hospital Services and Resource Use

Chapter 3

Changes in Hospital Services and Resource Use

In addition to decreasing rates of hospital admissions and length of stay, changes are occurring in the patterns of resources used and services furnished during a hospital admission. PPS payments are based on the historical average cost per case of hospital care. Hospitals that treat Medicare patients for less cost than the per-case payment realize a surplus.

Hospitals could reduce resource use in many areas. This chapter compares calendar year 1981 data with fiscal year 1984 data to show changes, to date, in the patterns of hospital care that have occurred since the implementation of PPS. The limitations of this information must be kept in mind. Fiscal year 1984 was the first year of PPS, and most hospitals had been under PPS for less than 12 months. In addition, PPS payment rates, relative to costs, were higher than they will be in the foreseeable future.

Therefore, changes that occurred between calendar year 1981 and fiscal year 1984 should not necessarily be interpreted as trends. While the changes described here and in Chapter 2 indicate that the use of hospital services is decreasing, much of this reduction began before the Tax Equity and Fiscal Responsibility Act was implemented. It is not clear whether this will continue and, if so, how it will affect the Medicare population, quality of care, and the financial status of hospitals.

Analysis of post-PPS hospital services is limited to only a portion of all Medicare discharges in fiscal year 1984. During that year, a hospital's discharges were paid under PPS after its own fiscal year began.

Dividing Medicare discharges in 1984 into pre- and post-PPS categories presents an incomplete picture of changes that occurred when hospitals began to receive payment under the new system. Some groups of hospitals, such as major teaching hospitals, tend to have fiscal years that begin after the start of the Federal fiscal year. Thus, for some groups, PPS experience was relatively brief in 1984.

Changes from 1981 to 1984 in the services provided during an inpatient stay, as well as changes in the regional variation of hospital resource use, are discussed. Finally, the development and diffusion of new technologies and services is examined, using what limited information is available.

NATIONAL TRENDS IN INPATIENT SERVICES

The reductions in length of stay illustrated in Figure 2 of Chapter 2 are largely attributable to declines in routine care days rather than to declines in special care days. Routine care services include the regular room, dietary, and nursing services; additional medical, surgical, and social services; and the use of certain equipment and facilities for which a separate charge is not customarily made. Special care services include services in units where the nursing care required is extraordinary and on a concentrated, continuing basis.

The average length of stay per discharge, from 1981 to 1984, decreased by approximately 1.26 days, from 8.24 days in 1981 to 6.98 days in 1984 for discharges under PPS (see Table 4). Most of that decrease was in routine care days. Average routine care days decreased from 7.70 in 1981 to 6.44 in 1984, whereas average special care days decreased only slightly, from 0.54 in 1981 to 0.52 in 1984.

The average length of stay per surgical discharge also decreased between 1981 and 1984. Surgical patients entered the hospital approximately one-third of a day closer to the date of surgery and were discharged almost a full day sooner following surgery (see Table 4).

Table 4.—Comparison of Average Length of Stay Variables

	1981 All discharges	1984 Pre-PPS	1984 Post-PPS
Routine care	7.70	6.97	6.44
Special care	0.54	0.53	0.52
Pre-operative*	2.30	2.35	2.07
Post-operative*	6.68	5.79	5.76
Total	8.24	7.55	6.98

* These values were calculated using discharges grouped into surgical DRGs.

SOURCE: ProPAC calculations based on MEDPAR (1981) and PATBILL (1984) data. Cases classified as LOS and cost outliers have been excluded from this table. Outlier cases for 1981 were simulated using fiscal year 1984 LOS cutoffs. Fiscal year 1984 cost outlier thresholds were lowered to reflect the inflation in charges between 1981 and 1984.

Ancillary charges rose from 54.3 percent of total charges in 1981 to 59.5 percent in 1984 (see Table 5). The shift occurred because ancillary charges increased substantially more than routine care charges. Ancillary charges increased by 44.0 percent between 1981 and 1984, while routine care charges grew by 14.1 percent. After adjusting for inflation, total ancillary charges remained relatively constant, while special care charges declined slightly. Routine care charges declined substantially.

Table 5.—Departmental Charges as a Percentage of Total Charges*

	1981	1984 Pre-PPS	1984 Post-PPS
Routine care	39.4%	35.7%	34.2%
Special care	6.0%	5.8%	6.0%
Total ancillary	54.3%	57.8%	59.5%
Total	100	100	100

* Columns may not add to 100 percent due to rounding.

SOURCE: ProPAC calculations based on MEDPAR (1981) and PATBILL (1984) data. Cases classified as LOS and cost outliers have been excluded from this table. Outlier cases for 1981 were simulated using fiscal year 1984 LOS cutoffs. Fiscal year 1984 cost outlier thresholds were lowered to reflect the inflation in charges between 1981 and 1984.

Within ancillary departments, laboratory and radiology charges, as a percentage of total ancillary charges, decreased slightly, while drugs and medical supplies have increased slightly (see Table 6). This suggests a modest reduction in diagnostic testing.[1]

Table 6.—Itemized Ancillary Charges as a Percentage of Total Ancillary Charges*

	1981	1984 Pre-PPS	1984 Post-PPS
Anesthesia	2.3%	2.2%	2.1%
Drugs	18.4	19.3	19.9
Inhalation	8.7	8.4	8.1
Laboratory	21.4	19.8	19.5
Medical supplies	12.5	13.8	14.3
Operating room	11.9	12.1	12.0
Radiology	10.3	9.1	9.1
Other	14.6	15.2	15.0
Total ancillary	100	100	100

* Columns may not add to 100 percent due to rounding.

SOURCE: ProPAC calculations based on MEDPAR (1981) and PATBILL (1984) data. Cases classified as LOS and cost outliers have been excluded from this table. Outlier cases for 1981 were simulated using fiscal year 1984 LOS cutoffs. Fiscal year 1984 cost outlier thresholds were lowered to reflect the inflation in charges between 1981 and 1984.

The ancillary category with the greatest increase in charges was medical supplies, which increased by almost 65.0 percent between 1981 and 1984. Many of the new therapeutic devices, such as pacemakers and artificial hips, appear as charges in the medical supplies category. The data, however, are not sufficiently disaggregated to draw conclusions regarding the adoption of new technologies.

The overall evidence suggests that, between 1981 and 1984, there was a modest reduction in the use of some ancillary services. Specifically, laboratory and radiology charges declined as a proportion of total ancillary charges, which suggests a reduction in diagnostic testing. This may have occurred because these services are being provided before or after an inpatient stay. At this time, however, the Commission is unable to determine the impact of these apparent changes in the use of ancillary services.

GEOGRAPHIC VARIATIONS IN RESOURCE USE

Geographic variations in resource use have historically been quite large, partially because of prior incentives under cost-based reimbursement. The prospective payment system, on the other hand, provides strong incentives to reduce unnecessary or inefficient resource use. In evaluating the impact of PPS, it is important to determine whether these incentives for efficiency will reduce regional differences in resource use, both within particular regions and between different regions.

Observed geographic variations in resource use may result from a variety of factors, including regional differences in:

- Prevailing patterns of medical practice,
- Severity or complexity of patients treated or both,

- Access to hospital care,
- Access to post-hospital care,
- Quality of hospital care provided,
- Hospital coding practices,
- Hospital efficiency, and
- Hospital product; that is, the mix of hospital versus non-hospital inputs used in treating an episode of illness.

Impact of National Payment Amounts

As national PPS rates are phased in, hospitals in high-cost regions, in general, will face stronger pressure to reduce their average level of resource use than hospitals in low-cost regions. To the extent that observed geographic variations occur primarily because of regional differences in hospital efficiency, for example, national payment amounts will encourage hospitals in high-cost regions to reduce inefficient resource use. If hospitals respond to this pressure, the transition to national payment amounts should result in reduced geographic variations in resource use. It should also lead to greater reductions in resource use in high-cost regions than in low-cost regions.

On the other hand, observed geographic variations may occur primarily because of factors that are beyond hospital control, such as patient severity or access to post-hospital care. In this case, national payment amounts may inappropriately penalize hospitals in regions with a greater proportion of severely ill patients or in regions where patients have limited access to post-hospital care.

Geographic Variations During the First Year of Prospective Payment

During the early period of the prospective payment system, average resource use *between* regions did not change substantially. On the other hand, average resource use *within* regions did change substantially, particularly in those that have historically been high resource regions.

More specifically, PPS did not substantially reduce the difference in average length of stay or average standardized charges between the highest and lowest regions for selected DRGs. Within regions, however, PPS had a greater impact on areas with above-average resource use than on those with below-average resource use. Above-average regions had larger decreases (or smaller increases) in length of stay and charges per case compared with below-average regions. Because both high- and low-cost regions reduced resource use, however, the difference between them was not significantly diminished.

It is difficult to determine the cause of these changes because many of the factors that produce geographic variation are hard to measure directly. Moreover, the response of hospitals to PPS incentives may be indistinguishable from other concurrent trends.

Patterns in average resource use of three groups of DRGs illustrate changes in geographic variation that occurred during the early stages of PPS. The first group contains the five highest-volume surgical DRGs during fiscal year 1984; the second group, the five highest-volume medical DRGs during fiscal year 1984.[2] (Within these DRGs, decreases in average resource use are likely to have the greatest impact on net hospital revenue.) The third group contains four pairs of clinically similar DRGs that were matched according to the presence or absence of a non-operating room procedure.[3]

Geographic variations within these DRGs may reflect regional differences in prevailing practice patterns. Therefore, changes in average resource use within these DRGs may indicate the rate at which prevailing practice patterns can change in response to PPS.

Length of Stay.—The national average length of stay decreased within each group of DRGs during Federal fiscal year 1984 (see Table A-1, Appendix A). Medical DRGs had the greatest decrease, followed by paired DRGs, and then surgical DRGs. The decreases in regional average length of stay were generally greater within rural areas than within urban areas. At both the regional and national level, routine care had greater decreases, or smaller increases, than special care.

Between calendar year 1981 and Federal fiscal year 1984, routine care days decreased, while special care days per admission increased substantially (see Table A-2, Appendix A). However, during fiscal year 1984, special care days decreased (see Table A-1, Appendix A).

These findings suggest that PPS reversed a trend toward greater utilization of special care days.

Charge Per Case.—The national average standardized charge per case increased for surgical DRGs and decreased for medical DRGs during fiscal year 1984 (see Table A-3, Appendix A). For paired DRGs, the national average charge per case increased within urban areas and decreased within rural areas.

At the regional and national levels, the greatest increase occurred, in general, in average charges for ancillary services (see Table A-4, Appendix A). The largest increases occurred in charges for anesthesiology, radiology, and inhalation therapy. The increases in charges for ancillary services were generally much smaller for medical DRGs than for surgical or paired DRGs.

The largest increases in average standardized charges between calendar year 1981 and fiscal year 1984, in general, were for ancillary services, followed by charges for special care and for routine care (see Table A-5, Appendix A). The greatest increase in average charges during this period was for special care within medical DRGs.

Regional Differences.—During the first year of PPS, changes in average resource use were greater within regions than between regions.

PPS had no substantial impact in reducing the difference in average length of stay between the highest and lowest regions, when these regions were compared to the national average (see Table 7). In fact, the relative difference between the highest and lowest regions appears to have remained rather stable between calendar year 1981 and fiscal year 1984.

Table 7.—Regional Differences in Average Length of Stay*

DRG Type	Region	Urban Fiscal Year 1984 Pre-PPS	Urban Fiscal Year 1984 Post-PPS	Rural Fiscal Year 1984 Pre-PPS	Rural Fiscal Year 1984 Post-PPS
Surgical	Highest	6.5%	14.4%	5.0%	3.8%
	Lowest	−16.6	−11.1	−16.4	−14.8
Medical	Highest	11.2	11.3	13.8	7.9
	Lowest	−22.8	−17.5	−20.3	−23.4
Pairs	Highest	9.1	16.8	17.1	20.0
	Lowest	−20.3	−11.9	−23.8	−12.4

DRG Type	Region	Urban Calendar Year 1981	Urban Fiscal Year 1984	Rural Calendar Year 1981	Rural Fiscal Year 1984
Surgical	Highest	12.7%	7.6%	11.2%	5.4%
	Lowest	−18.6	−13.8	−17.2	−15.5
Medical	Highest	14.8	16.3	11.2	19.1
	Lowest	−13.2	−20.9	−17.0	−20.7
Pairs	Highest	6.1	9.2	20.6	22.3
	Lowest	−8.8	−16.5	−14.7	−17.0

* Differences are presented as percentages above and below the national average.

SOURCE: ProPAC calculations based on MEDPAR (1981) and PATBILL (1984) data. Cases classified as LOS and cost outliers have been excluded from this table. Outlier cases for 1981 were simulated using fiscal year 1984 LOS cutoffs. Fiscal year 1984 cost outlier thresholds were lowered to reflect the inflation in charges between 1981 and 1984.

Likewise, PPS did not substantially reduce the difference in average standardized charges between the highest and lowest regions relative to the national average (see Table 8). Because average standardized charges were adjusted to remove variations resulting from area wage rates and indirect teaching expenses, the reported variations were caused by other factors.

Table 8.—Regional Differences in Average Standardized Charges*

DRG Type	Region	Urban Fiscal Year 1984 Pre-PPS	Urban Fiscal Year 1984 Post-PPS	Rural Fiscal Year 1984 Pre-PPS	Rural Fiscal Year 1984 Post-PPS
Surgical	Highest	10.1%	11.9%	11.2%	9.5%
	Lowest	−7.9	−6.6	−8.3	−5.8
Medical	Highest	4.8	13.7	12.0	13.3
	Lowest	−9.0	−10.3	−11.4	−9.4
Pairs	Highest	33.9	15.0	33.7	94.4
	Lowest	−27.2	−9.8	−27.8	−21.2

DRG Type	Region	Urban Calendar Year 1981	Urban Fiscal Year 1984	Rural Calendar Year 1981	Rural Fiscal Year 1984
Surgical	Highest	5.6%	11.2%	5.4%	6.3%
	Lowest	−8.6	−9.8	−6.4	−8.3
Medical	Highest	9.0	4.8	8.6	8.3
	Lowest	−6.6	−9.2	−10.3	−10.2
Pairs	Highest	14.6	24.9	36.8	51.4
	Lowest	−13.9	−15.1	−25.2	−24.3

* Differences are presented as percentages above and below the national average.

SOURCE: ProPAC calculations based on MEDPAR (1981) and PATBILL (1984) data. Cases classified as LOS and cost outliers have been excluded from this table. Outlier cases for 1981 were simulated using fiscal year 1984 LOS cutoffs. Fiscal year 1984 cost outlier thresholds were lowered to reflect the inflation in charges between 1981 and 1984.

Regional differences were also analyzed by dividing all regions into two groups—regions in which resource use exceeded the national average and regions in which resource use was below the national average. These findings suggest that PPS did have a substantial impact in reducing the average resource use within above-average regions during fiscal year 1984, for each type of selected DRG. Regions with above-average resource use had larger decreases in average length of stay (see Table 9) and larger decreases (or smaller increases) in average charge per case (see Table 10), compared to regions with below-average resource use. In general, regional resource use increased the least within medical DRGs, followed by paired DRGs and surgical DRGs.

Table 9.—Regional Differences in Average Length of Stay Before and After PPS Implementation (Fiscal Year 1984)

DRG Type	Urban			Rural		
	National Average	Above-Average Regions	Below-Average Regions	National Average	Above-Average Regions	Below-Average Regions
Surgical	−1.7%	−4.4%	5.6%	−3.5%	−5.6%	1.4%
Medical	−12.9	−11.5	−8.0	−11.0	−12.6	−9.6
Pairs	−2.9	−5.8	3.5	−9.0	−15.3	−3.9

SOURCE: ProPAC calculations based on PATBILL (1984) data. Cases classified as LOS and cost outliers have been excluded from this table.

Table 10.—Regional Differences in Average Standardized Charge Per Case Before and After PPS Implementation (Fiscal Year 1984)

DRG Type	Urban			Rural		
	National Average	Above-Average Regions	Below-Average Regions	National Average	Above-Average Regions	Below-Average Regions
Surgical	9.6%	5.6%	24.5%	2.7%	0.4%	3.8%
Medical	−2.7	−3.9	−3.9	−6.9	−8.1	−5.7
Pairs	9.3	1.5	17.1	−13.1	−24.7	−1.6

SOURCE: ProPAC calculations based on PATBILL (1984) data. Cases classified as LOS and cost outliers have been excluded from this table.

Based on this evidence for selected DRGs during the first year of PPS, the difference in average resource use *between* regions did not change substantially. The evidence does suggest, however, that average resource use did change substantially *within* regions.

IMPLICATIONS OF PPS FOR MEDICAL TECHNOLOGY

A significant portion of the growth of Medicare expenditures between 1965 and 1984 was due to the use of more services per patient. New services frequently emerge as a result of advances in diagnostic and therapeutic technologies. Fixed-price systems like PPS create incentives to adopt technologies that decrease costs and to carefully consider purchasing technologies that increase costs.

In general, setting prospective per-case payments encourages providers to be more sensitive to the costs and benefits of health care technologies. In addition, specific features of PPS affect the level of payment and could indirectly influence the development and diffusion of new technologies. These features include the assignment of cases using new technologies to appropriate DRGs and the adjustment of DRG weights to reflect the costs of a new technology. Both will be discussed in this section.

Although PPS, together with other factors, may slow the rate of diffusion of some new technologies, this is not necessarily unfortunate. Some of these technologies are of no additional benefit to the patient's health and others are not worth their added cost.

Despite uncertainties related to PPS, diffusion of new technologies, such as magnetic resonance imaging (MRI) and extracorporeal shock wave lithotripsy (ESWL), and new devices, such as sophisticated pacemakers, appears to be continuing. This may be due to factors beyond the influence of PPS which can influence technology acquisition.

Emerging competitive pressures on hospitals to attract patients may lead hospitals to adopt new, cost-increasing technologies. In addition, other incentives may encourage hospitals to purchase new technology. For example, many costly new medical technologies involve substantial capital-related costs. Currently, these are paid on a cost basis. This provision may encourage hospitals to purchase capital-intensive technologies in the short run before alternative payment mechanisms are developed.

PPS has several provisions that permit modifications that may encourage timely and appropriate payments for new medical technologies. For these provisions to be effective, periodic regulatory changes must be made. Even if regulatory changes are made, however, there is no assurance that hospitals will adopt the new technologies.

Adjustments to the system, such as the update factor, and factors outside the system have, to date, been able to prevent major adverse effects on the diffusion of medical technologies. Whether this will continue to be true in the future is unclear. If outlier payments, adjustments for teaching hospitals, exemptions and adjustments for referral centers, and capital become more restricted, then technology adoption may slow somewhat.

It is too early to assess in depth the effect of PPS on technology diffusion. The data presented earlier in Table 6 indicate that, to date, the use of some technologies, as measured by ancillary department charges, has changed. However, the costs and utilization of individual technologies cannot yet be identified. Furthermore, large geographic variations in resource use mask much of the impact of PPS on the adoption of specific new technologies. In addition, the general level of payments under PPS, rather than any specific features of the payment system, may have the greatest influence on technology.

PPS Policies and Their Implications

The purchasers and manufacturers of medical technologies face an entirely new set of financial incentives under PPS. Upon recognizing these constraints within the payment system, hospitals and manufacturers may alter their decisions to purchase or to develop new medical technologies.

Hospitals now share the financial risk in caring for Medicare beneficiaries. These providers must therefore make careful decisions when purchasing new medical technologies. Manufacturers, in turn, may anticipate declining markets and decide not to proceed with the development of new technologies.

PPS has raised concerns about financial incentives that might discourage the development and use of quality-enhancing, cost-increasing new technologies. ProPAC was created partly to respond to these concerns. The Commission's recommendations to the Secretary on the update factor and on changes in DRG classification and weights are intended to provide sufficient payment for appropriate technological improvements.

Keeping Payment Prices Current

A problem in keeping PPS payments up-to-date with changing medical practice concerns the timeliness of data collection. The DRG weights that determine relative prices are based on data which reflect past treatment practices. This feature of PPS may affect cost by limiting its responsiveness to changes in the use of new technologies.

One way of dealing with this problem is through frequent recalibration of the DRG weights. To keep pace with changes in technology and other health care resource use, ProPAC has recommended annual recalibration of the DRG weights.

Recalibration gradually reflects changes in the use of hospital resources, including the use of technology, as the costs associated with new practices are averaged with the costs of existing technologies. For example, the recalibration

proposed by HCFA for fiscal year 1986 will increase the weight (and hence, the payment) for pacemaker implantation (DRG 116) by about 5 percent.[4] This reflects, among other factors, an increase in the use of dual-chamber pacemakers, which are more expensive than single-chamber pacemakers.

Even annual recalibration may be insufficient to accommodate extremely expensive technologies like magnetic resonance imaging. Discharges involving MRI are currently underpaid for the costs associated with this new technology. To correct this kind of problem, ProPAC is considering, in this instance, a recommendation for an additional payment amount for MRI scans performed on inpatient Medicare beneficiaries.[5] The Commissioners will reexamine this approach, if implemented, after three years to assess its adequacy and appropriateness.

Appropriate DRG Assignment

DRG assignment also has the potential to affect decisions hospitals make regarding the adoption of a new technology. The introduction of a new technology may necessitate creating DRGs or assigning new procedures and treatments to existing DRGs. Because the information about a technology and its costs may be insufficient, selecting the appropriate DRG assignment may be difficult.

The limited ability of the ICD-9-CM diagnostic and procedure coding system to differentiate between new and existing technologies may place a new procedure or technology into a DRG that may affect the adoption of that procedure or technology.

The original assignment of percutaneous transluminal coronary angioplasty (PTCA) is illustrative. PTCA was placed into a DRG that was clearly weighted too highly. Initially, cases in which PTCA was the principal procedure were assigned to DRG 108. This DRG was created for major surgical procedures that usually require significantly greater resources than PTCA. In its April 1985 report to the Secretary of Health and Human Services, ProPAC recommended, and HCFA agreed, to reassign PTCA to the more appropriately weighted DRG 112 (Vascular Procedures Except Major Reconstruction).

Other examples demonstrate the flexibility of the prospective payment system to create new DRGs or to incorporate new procedures that reflect changing medical practices and technologies. DRG 471 was created to appropriately recognize the costs associated with bilateral or multiple major joint procedures of the lower extremity. A new procedure for the treatment of kidney stones, extracorporeal shock wave lithotripsy, was assigned to two existing DRGs (323 and 324) based on the best available cost data.

The appropriateness of DRG assignments and weights requires ongoing analysis. When necessary, changes can be made to ensure that the appropriate financial incentives encourage technological improvements in health care services.

Average Fixed-Price Payment

One of the specific characteristics within PPS that can affect the use of technology is payment of a fixed price per discharge. Discharges involving pacemaker implantation, for example, illustrate a number of incentives related to this feature of PPS.

Fixed-price payment discourages diversity in selecting implantable devices that may vary substantially in cost. First, there is a single payment for all cases in a DRG. Although the list prices of pacemakers range from about $2,000 for the simplest models to $7,000 for the most sophisticated, hospitals receive the same payment regardless of the model implanted. The single DRG payment discourages using the more expensive devices, with potential effects on a patient's well-being. Currently, the beneficiary is prevented by law from paying for a more expensive model, even if willing to do so.

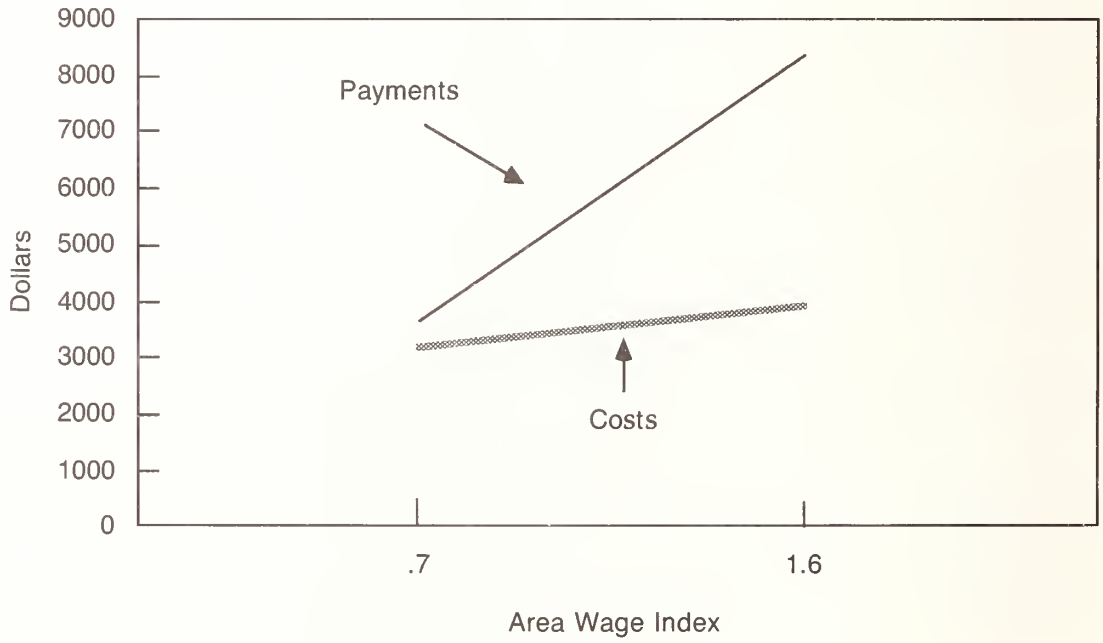
Second, DRG payment amounts are adjusted based on hospital location, area wage rates, and teaching status. As currently applied, these adjustments are not appropriate for device-intensive DRGs, such as pacemakers, where the cost of the device accounts for a substantial portion of the total costs of the hospital stay. Labor

costs account for approximately 80 percent of total costs in the average DRG. The device-intensive DRGs are less labor-intensive, however, and devices are generally purchased in a national market across which costs are relatively uniform.

The financial incentives to use devices like pacemakers are greater for some hospitals than for others. These incentives are due to the unintentional consequences of adjustments made to the average payment. Since adjustments for hospital location and teaching status are based on *average* cost differences across hospitals, PPS may be paying some institutions (e.g., urban and teaching hospitals) at the expense of others (e.g., rural and nonteaching hospitals).

Hospitals in areas with relatively high wages receive higher payments for pacemaker implantation or replacement than hospitals in areas with lower wages. However, the costs for pacemaker implantation or replacement do not differ substantially between hospitals in high-wage and low-wage areas (see Figure 4).

Figure 4.—The Relationship Between Area Wage Index and Hospital Costs and Payments for Discharges in DRG 118 (Pacemaker Replacement)



For example, for discharges in DRG 118, a hospital in an area with a wage rate 50 percent above the average, as measured by the area wage index, receives per-case payments that are 44 percent higher than a hospital in an area with an average wage rate. Yet its costs per case are only 9 percent higher. This occurs because labor costs—the portion of the DRG payment that is adjusted for wage differences—are a much smaller portion of total costs in this DRG than in the average DRG. The cost of the pacemaker itself represents a large portion of the cost in this DRG, and prices for devices do not vary as much as wages across the nation.

The Commission is considering whether to recommend adjustments to PPS that would better recognize the costs of devices, thereby providing a better set of financial incentives. Such adjustments may be the most important

mechanism to encourage the continued development and use of more costly but quality-enhancing new technologies.

Other Influences on the Adoption of Medical Technology

Other factors figure heavily in the decisions of providers to acquire new technologies. Among these are government policies, such as the lengthy Food and Drug Administration (FDA) approval process and the process by which Medicare decides when new technologies and procedures become covered benefits.

The "piggyback" effect of Federal government policies with the policies of other payers may further influence the diffusion of new medical technologies. Many private insurance carriers and state Medicaid programs look to the Medicare program in making their own coverage and payment policy decisions.

While some incentives continue for hospitals to invest in new technologies, other factors inhibit development and diffusion. For instance, many states have certificate-of-need (CON) and other regulatory programs that may deter the diffusion of some medical technologies. In these states, many hospitals and other providers have shifted the locus of their services for costly technologies to avoid CON requirements.

Magnetic resonance imaging is a case in point. An important new imaging technology, MRI frequently is likened to computed tomography (CT). A recent study suggests that MR imagers are not being adopted as rapidly as CT scanners were a decade ago, and that they tend to be installed outside the hospital.[6] This move to outpatient sites of service may offset PPS disincentives to provide some technologies on an inpatient basis.

The prospective payment system, together with other changes in the delivery and financing of health care services, could significantly affect the development and adoption of new medical technologies and procedures. Medicare policies, including annual recalibration of DRG weights and prompt changes in DRG assignment for new procedures, help keep payments up-to-date. Other adjustments, such as those related to high-cost devices, are currently under study.

Because of the lengthy lag associated with the development, diffusion, and adoption of new technologies, it is too early to draw definite conclusions regarding the impact of PPS on new technology. Additional research and analysis will be necessary to provide the information for further modifications of PPS.

Notes to Chapter 3

1. This conclusion is also supported by preliminary results obtained from a study being conducted for ProPAC by the Commission on Professional and Hospital Activities (CPHA). This study indicates that the utilization of diagnostic tests, laboratory tests, and X-rays remained relatively constant from 1980 to 1983, and then declined sharply between 1983 and 1984 for both Medicare and non-Medicare patients in CPHA hospitals. On the other hand, drug utilization increased slightly throughout the entire period from 1980 to 1984.
2. The five highest-volume surgical DRGs during fiscal year 1984 were: DRG 209 (Major Joint and Limb Reattachment Procedures); DRG 336 (Transurethral Prostatectomy, Age >69 and/or Comorbidities and Complications); DRG 39 (Lens Procedures); DRG 210 (Hip and Femur Procedures Except Major Joint, Age >69 and/or Comorbidities and Complications); and DRG 148 (Major Small and Large Bowel Procedures, Age >69 and/or Comorbidities and Complications).

   The five highest-volume medical DRGs were: DRG 127 (Heart Failure and Shock); DRG 89 (Simple Pneumonia and Pleurisy, Age >69 and/or Comorbidities and Complications); DRG 140 (Angina Pectoris); DRG 182 (Esophagitis, Gastroenteritis, and Miscellaneous Gastric Disorders, Age >69 and/or Comorbidities and Complications); and DRG 14 (Specific Cerebrovascular Disorders Except Transient Ischemic Attack).
3. The four pairs of DRGs were: DRG 104 (Cardiac Valve Procedure, with Cardiac Catheterization) and DRG 105 (Cardiac Valve Procedure, without Cardiac Catheterization); DRG 106 (Coronary Bypass with Cardiac Catheterization) and DRG 107 (Coronary Bypass without Cardiac Catheterization); DRG 411 (History of Malignancy without Endoscopy) and DRG 412 (History of Malignancy with Endoscopy); DRG 316 (Renal Failure without Dialysis) and DRG 317 (Renal Failure with Dialysis).
4. Prospective Payment Assessment Commission, *1986 Adjustments to the Medicare Prospective Payment System—Report to the Congress* (Washington DC: ProPAC, November 1985). Implementation of the regulations has been postponed by the Congress until March 15, 1986.
5. The Commission made this recommendation only after HCFA began to cover capital costs associated with MRI. The Commission decided to recommend the adjustment because MRI replaces some use of CT scans, and the medical profession does not agree on appropriate uses of the technology.
6. Earl P. Steinberg, Jane E. Sisk, and Katherine E. Locke, "X-Ray CT and Magnetic Resonance Imagers," *N.Eng.J.Med.*, 313(14):859-864, October 3, 1985.

Chapter 4

Financial Consequences for Hospitals

Chapter 4

Financial Consequences for Hospitals

Because Medicare represents about 40 percent of hospital revenues, substantial changes in Medicare payment policy, such as those embodied in PPS, are bound to affect the overall financial status of hospitals. Medicare-related changes in financial condition for hospitals may result from a combination of the general incentive hospitals have to reduce costs under a prospective pricing system and the specific incentives associated with PPS policies, such as the level of the payment rates.

This chapter discusses several aspects of hospital finances under PPS. The first section examines the implications of PPS for both the level of Medicare hospital payments and its distribution across different types of hospitals. The second section moves beyond PPS to describe recent trends in the overall financial condition of the hospital industry, including issues related to hospital capital financing.

PAYMENTS TO HOSPITALS UNDER THE PROSPECTIVE PAYMENT SYSTEM

PPS affects hospital finances through both the level of Medicare payments to hospitals and the distribution of those payments among various types of hospitals. The level of PPS payments is not inherent in prospective pricing, and has been largely determined by Federal budgetary considerations. Despite this, the specific attributes of PPS determine the way in which Medicare payments are distributed among hospitals.

The Level of Medicare Payments to Hospitals

Since 1983, the rate of growth in Medicare per-case payments to hospitals has declined, although not as dramatically as might have been expected given the relatively small increases allowed for DRG prices. Per-case Medicare hospital payments increased at an annual rate of about 10 percent in the first two years of PPS, compared to a 13 percent annual average for the previous ten calendar years. Payments per case rose much faster than DRG prices as a result of a larger than expected increase in hospital case-mix indexes. As discussed in Chapter 2, the increase in case mix is mostly a result of improvements in coding and came primarily in the first few quarters that hospitals were on PPS.

In addition to the decline the rate of increase in per-case spending, total Medicare hospital outlays have been lower than projected, primarily because of an unexpected decline in admissions. (See Chapter 2.) The admissions decline has been large enough to offset higher payments resulting from the increase in hospital case-mix indexes. An economywide inflation decline has also contributed to the slowdown in hospital expenditures. Hospital input prices rose 5.3 percent in fiscal year 1985, compared to a 9.4 percent annual average in the previous ten calendar years.

The slowdown in the growth of per-case Medicare hospital payments has been largely determined by factors external to prospective pricing. For the first two years of PPS, DRG prices were restrained so that total outlays, in principle, would be no more or less than outlays under the cost-reimbursement limits that would have otherwise been in effect. For fiscal year 1986 and the foreseeable future, the level of DRG prices will likely be further constrained by general limits on Federal spending.

Smaller increases in per-case spending, however, may be attributed, in part, to the cost-cutting incentives of PPS. Even though the direct link between current costs and payments has been broken by PPS, evidence of increased cost-consciousness on the part of hospitals has provided an opportunity for limiting increases in Medicare hospital payments.

In particular, lower than expected outlier payments may have resulted from a direct response to the PPS incentive to shorten length of stay. HCFA has reported that although outlier payments were projected to be 2.2 percent of total PPS payments in fiscal year 1984, actual outlier payments were only 0.8 percent of total PPS payments during that year[1]. This was primarily due to shortening lengths of stay. Since the decline in length of stay has continued into fiscal year 1985, it is expected that outlier payments for that year will also fall short of their anticipated levels. HCFA has published new outlier thresholds that reflect the shorter lengths of stay occurring in fiscal year 1984.

Shifts in the location of services from inpatient hospital to outpatient department and out-of-hospital settings may also explain part of the slowdown in aggregate Medicare payments to the hospital industry. Part of the decline in admissions may reflect more frequent outpatient treatment of less complicated cases. Inpatient care as a proportion of total Medicare payments has declined significantly in recent years. (See Chapter 6.)

Evidence suggests that the original PPS rates were higher than intended, although stringent updates expected for the near-term might offset this difference. All other factors held constant, estimated per-case payments based totally on national rates are about 5 percent higher than estimated payments based totally on hospital-specific rates. The hospital-specific rates reflect hospital costs two years before the beginning of PPS, whereas the regional and national rates were computed using older cost data from calendar year 1981. The estimated difference in payments based on these rates is probably due to the fact that the cost data used for the hospital-specific rates were audited, but the cost data used for the Federal rates were not. The auditing process would eliminate costs that are not allowed under Medicare rules. Analyses by the General Accounting Office and the Congressional Budget Office support this conclusion.[2]

The Distribution of Medicare Payments to Hospitals

The implementation of national PPS rates has and will continue to affect the distribution of Medicare revenue among hospitals. It is not evident, however, that the projected changes in distribution of payment reflect differences in efficiency. Given the likelihood of constraints in PPS payments under the Gramm-Rudmann-Hollings Act, some hospitals may be vulnerable to serious financial problems, perhaps even closure. Hospitals may implement measures to prevent these problems by increasing efficiency. It is not clear, however, whether such strategies will enable them to adjust to the effects of continued redistribution of constrained payments. Accordingly, more study of the reasons for differences in hospital costs is necessary.

During the transition to national rates, PPS payments are a blend of hospital-specific rates, regional average rates, and national average rates. The transition was designed to give hospitals time to adjust to the redistributive effects of payments based solely on national rates. As discussed in Chapter 3, regional differences in resource use changed little in the initial period after PPS implementation. Table 11 shows differences in payment based on national rates compared to hospital-specific rates across regions, by teaching status, and by hospital bedsize. Since they are based on each hospital's historical costs, payments under hospital-specific rates reflect the distribution of Medicare payments under cost reimbursement. (See Appendix B for a discussion of the data and methodology underlying the estimates.)

Much of the pattern of changes in distribution of payments under PPS is difficult to explain. It is not evident that the hospitals that gain the most from national rates are necessarily the most efficient. Among the hospital groups that do relatively well under national average payment rates are urban hospitals with fewer than 100 beds, and hospitals in the New England and East South Central Census Divisions. Groups of hospitals that fare worse than

Table 11.—Average Relative Difference Between Per-Case Payments Based on Hospital-Specific Rates and on National Rates (In Percent)[a]

Hospital Type	With New York[b]	Without New York
All Hospitals	0	0
Urban	0.6%	0.2%
Rural	−3.3	−1.0
Major teaching	4.3	1.1
Other teaching	−0.5	−1.1
Nonteaching	−0.6	1.2
Disproportionate share hospitals	4.3	1.9
New England	0.6	3.2
Middle Atlantic	15.2	2.1
South Atlantic	−1.5	1.1
East North Central	−6.4	−3.8
East South Central	1.4	3.9
West North Central	−4.6	−2.0
West South Central	−3.6	−1.0
Mountain	−3.1	−0.5
Pacific	−0.5	2.1
Urban <100 beds	10.2	11.3
Urban 100-404 beds	1.5	1.4
Urban 405-684 beds	0.6	0.1
Urban 685+ beds	−2.5	−6.1
Rural <100 beds	−0.7	1.6
Rural 100-169 beds	−7.4	−5.1
Rural 170+ beds	−2.1	0.5

[a] National payments were estimated using the new weights, outlier thresholds, and area wage index included in the HCFA regulations published in the September 3, 1985 *Federal Register*, modified by the Conference agreement on budget reconciliation (H.R. 3128), which includes a lower teaching adjustment from current law and the addition of an adjustment for disproportionate share hospitals. For a description of the data and methodology underlying the estimates see Appendix B of this report.

[b] Estimated payments to New York, which began PPS in January 1986, may be overstated. This effects the distribution of payments across all hospitals. In particular, estimated outlier payments to hospitals in New York are unlikely to be entirely realized because PPS has incentives to reduce length of stay.

SOURCE: ProPAC analysis based on the fiscal year 1984 PATBILL and Provider Specific Files provided by the U.S. Department of Health and Human Services, Health Care Financing Administration.

average are large rural hospitals and hospitals located in the East and West North Central Census Divisions.

The addition of New York hospitals, which only began PPS in January 1986, could have a large effect on the distribution of payments under national rates. In particular, when modeled using fiscal year 1984 discharges, outlier payments to New York would increase total outlier payments to hospitals by more than 30 percent. This result is caused by the much higher than average length of stay in New York hospitals under the pre-PPS waiver payment system, in which payments were made on a per-diem basis. These estimated outlier payments are unlikely to be entirely realized because PPS has incentives to reduce length of stay, and because outlier payments are not allowed for days in which Medicare patients are awaiting nursing home placement.

Although payments to hospitals outside New York do not change, New York is a large enough state to affect the overall average, and therefore affect how hospitals in other regions do relative to the average. For example, the increase in per-case payments to hospitals in the South Atlantic region under national rates is 1.1 percentage points above the average without New York, but 1.5 percentage points below the average with New York. Moreover, because New York has many major teaching hospitals, the relative increase in payments

under national rates is larger for this group when New York hospitals are included.

To the extent that length of stay is not shortened in New York hospitals, future outlier payments may be reduced for all hospitals. The PPS statute requires that outlier thresholds be set so that payments are between 5 and 6 percent of all PPS payments. If outlier payments to hospitals in New York are large enough, future outlier thresholds may be tightened for all hospitals so that outlier payments fall in the required range.

The hospitals that are estimated to have the largest declines in payment from hospital-specific to national rates also show different trends in occupancy rates and staffing patterns. Between 1980 and 1984, the occupancy rate for this group of hospitals fell from 68 percent to 57 percent compared to a drop from 66 percent to 59 percent over all PPS hospitals. In addition, the average increases in staffed beds and full-time equivalent personnel were much slower for these hospitals than for the average PPS hospital. The average hospital in this group experienced a 2 percent increase in FTEs between 1980 and 1984, compared to 5 percent for all hospitals.

The distribution of PPS payments under national rates can be further understood by looking at the payment components separately. These components are the basic wage-adjusted national rate, payments for the indirect costs of teaching interns and residents, outlier payments, and payments to hospitals serving a disproportionate share of low-income patients. Table 12 shows the proportion of PPS payments attributed to each of these components under fully national PPS rates.

Table 12.—Distribution of PPS Payments by Type of Payment (In Percent)[a]

Hospital Type	Basic Payment	Outlier Payment[b]	Indirect Teaching Payment[c]	Disproportionate Share Payment[d]
All Hospitals	89%	6%	4%	2%
Urban	87	6	5	2
Rural	96	3	1	*
Major teaching	66	10	20	4
Other teaching	86	6	6	2
Nonteaching	94	4	0	1
Disproportionate share hospitals	81	7	7	5
New England	82	11	6	1
Middle Atlantic[e]	84	8	6	1
South Atlantic	90	5	3	2
East North Central	88	6	5	1
East South Central	91	4	4	1
West North Central	91	5	2	2
West South Central	92	4	2	2
Mountain	93	4	3	*
Pacific	88	5	4	3
Urban <100 beds	96	3	*	*
Urban 100-404 beds	90	6	2	2
Urban 405-684 beds	84	7	7	2
Urban 685+ beds	78	8	12	2
Rural <100 beds	97	2	*	*
Rural 100-169 beds	97	3	*	*
Rural 170+ beds	95	4	1	*

* = less than 0.5 percent
Rows may not total to 100 due to rounding.

[a] National payments were estimated using the new weights, outlier thresholds, and area wage index included in the HCFA regulations published in the September 3, 1985 *Federal Register*, modified by the Conference agreement on budget reconciliation (H.R. 3128), which includes a lower teaching adjustment from current law and the addition of an adjustment for disproportionate share hospitals. For a description of the data and methodology underlying the estimates, see Appendix B of this report.

[b] Includes indirect teaching and disproportionate share payments earned on outlier cases.

[c] Excludes indirect teaching payments earned on outlier cases.

[d] Excludes disproportionate share payments earned on outlier cases.

[e] New York hospitals were excluded from estimates presented in this table. See Note b, Table 11.

If proposed changes in payment for teaching and disproportionate share hospitals occur, indirect teaching payments would comprise 4 percent of the total and outlier payments (under the new cutoffs), 6 percent. These proportions would vary by region and type of hospital, however. For example, part of the shift in payment from rural to urban hospitals results from outlier payments. Although the percent reduction in the standardized amounts for outlier payments is the same for urban and rural rates, outlier payments comprise 6 percent of total payments to urban hospitals and only 3 percent of payments to rural hospitals.

THE CHANGING FINANCIAL CONDITION OF HOSPITALS

This section presents an overview of the hospital industry's financial condition as indicated by analysis of hospital financial statements. The effects of PPS are not distinguished from the effects of other influences. The analysis focuses on four key areas of the financial condition of hospitals. For a description of the financial ratios presented, refer to the notes at the end of this chapter.

- *Profitability* — as indicated by operating margin ratio. Refer to Appendix C, Table C-1.
- *Liquidity* — as indicated by the current ratio, the days in accounts receivable, and average payment period ratios. Refer to Appendix C, Table C-2.
- *Asset Utilization* — as indicated by the total asset turnover ratio. Refer to Appendix C, Table C-3.
- *Debt Financing* — as indicated by the equity financing and cash flow to total debt ratios. Refer to Appendix C, Table C-4.

While ratios may be useful in assessing the financial health of the industry, there are some limitations inherent in these data.[3] Determining the overall financial position requires going beyond financial statements and examining qualitative data, such as hospital behavior and the nature of the industry and its product.

This analysis includes ratio values for the period 1980 through 1984, the year hospitals began receiving payment under PPS at the start of their fiscal years. While several favorable improvements occurred in 1984, existing and proposed health policy may affect future financial performance. For example, favorable improvements in profitability may continue as Medicare moves to totally national rates and hospitals continue to constrain costs. (This is because Federal rates were set higher than intended. Payments based on totally national rates are approximately 5 percent higher than per-case hospital-specific payment amounts.) On the other hand, implementation of budget reductions, required by the Gramm-Rudman-Hollings Act, may lower payment levels for hospital services (potentially resulting in lower operating margins in the future).

General Observations

Overall, hospitals demonstrated favorable developments in several areas related to financial condition since the implementation of PPS. In 1984, hospitals reported a large increase in operating profitability following a smaller increase in 1983. The increase in 1984 is at least in part because hospitals could realize a profit on Medicare patients for the first time. Whether this performance will continue into the future is unknown.

Significant increases in profitability contributed to other favorable developments as well. For example, hospitals improved their ability to meet short-term financial obligations, although the industry remains in a less liquid position than in 1980. In addition, improved profitability, combined with stabilization in the level of outstanding debt, enhanced hospital ability to repay existing debt service in 1984. All of these factors contributed to an overall improvement in the hospital industry's financial condition in 1984.

There were, however, some unfavorable developments in the industry in 1984. Overall, more time elapsed before hospitals received payment for services rendered. In addition, the hospital industry, faced with reduced facilities

utilization resulting from a dramatic decline in patient days in 1984, is using its assets less efficiently. This poses a significant challenge for hospital managers to discover new methods for generating revenue or to downsize their operations.

The following is a more detailed discussion and supporting rationale for general observations regarding the financial condition of the hospital industry. Appendix C—Financial Indicators, provides values for several financial indicators for selected groups of hospitals.

Table 13.—Annual Percentage Change in Selected Financial Ratios Since 1980

	All Hospitals Annual Percentage Change			
Ratio	1981	1982	1983	1984
Operating margin	5.3	-0-	15.0	34.8
Current	−2.4	−1.7	.4	1.7
Total asset turnover	2.0	−1.0	−2.0	−4.1
Cash flow to total debt	1.1	−3.2	−7.1	14.1

SOURCE: Healthcare Financial Management Association's Financial Analysis Service. Refer to Appendix C for more information.

Profitability

In 1984, hospital operating margin ratios, a measure of the proportion of operating revenue retained as revenue, increased significantly.[4] According to Financial Analysis Survey data provided by the Healthcare Financial Management Association (HFMA), hospital operating margin ratios increased 34.8 percent in 1984.

Similar large increases were observed in the American Hospital Association's (AHA) Panel Survey data for 1984. Rural hospitals greatly improved their profitability position, although they still had the lowest profit margin of any of the hospital groups.

Increased hospital profitability may be related to a smaller rate of increase in deductions from gross patient service revenue in 1984. (These deductions are typically in the form of contractual allowances, bad debts, charity care, and courtesy discounts.)[5] This is indicated by the deduction ratio, which represents the proportion of gross patient revenues for which payment is not expected.[6] Previous annual percentage increases in deduction ratios ranged from 2.9 to 12.8 percent. A smaller increase of 2.8 percent in deduction levels in 1984 may reflect a number of changes, such as:

- A closer relationship between Medicare prospective rates and hospital charges;
- Less mark-up of charges over costs by hospitals; and
- Reduced access to uncompensated care.

Liquidity

In 1983 and 1984, hospitals demonstrated general improvement in liquidity indicators. (Liquidity refers to the ability of the hospital to meet financial obligations that will become due in the near future.) The current ratio, a liquidity indicator, measures short-run debt-paying ability by representing the number of dollars held in current assets per dollar of current liabilities.[7] Values for this ratio demonstrated a favorable increase of .4 percent in 1983 and 1.7 percent in 1984, following a decline that occurred in 1981 and 1982. Analysts cite most of this improvement as a function of improved operating margins for these two years.

The favorable effect of increased profitability on hospital liquidity is offset somewhat by

the increase in receivable days occurring in 1984. (Receivable days, as indicated by the days in patient accounts receivable ratio, refers to the average number of days elapsing before a hospital receives payment for services rendered.)[8] In part, the increase of 2.7 days in 1984 may be attributable to changes in Medicare policies that have delayed hospital payments. The increase in time before payment absorbs some of the additional cash flow from operating profits. In addition, increased days may require hospitals to borrow on a short-term basis or liquidate some of their current assets to meet current obligations.

The average time that elapses before current liabilities are paid, as indicated by the average payment ratio, has also been increasing over time.[9] Values for this ratio indicate an increase in delay of payments by an average of 2.1 days in 1984. The delay may reflect the industry trend toward changing cash management practices in an effort to conserve working capital cash balances. In larger hospitals or hospital systems, centralized cash management may cause delays in payment of current liabilities. In addition, increases in the average payment period may be related to a lengthening in the patient accounts receivable cycle.

Asset Utilization

In 1984, there was a sharp decline in the total asset turnover ratio, an index of operating revenue generated per dollar of asset investment.[10] This may be the result of a decline in hospitals' ability to generate revenue from existing assets, caused by a drop in utilization and resulting excess capacity. A decline in asset utilization may also indicate that hospitals are increasing their investments in assets that generate nonoperating revenue.

Under these circumstances, hospitals are challenged with implementing new strategies to generate additional revenue or downsize their operations. These management strategies include merger and acquisition, increased advertising and marketing, specialization of services, and shift of services to alternative sites of care. (See Chapter 2.)

Debt Financing

A hospital's capital structure may determine the level of funding available and, therefore, its rate of growth. A hospital's ability to increase the use of debt financing results from creditors' perceptions and is strongly influenced by expected profitability.

In 1984, most measures of financial leverage stabilized or improved for the hospital industry. (Financial leverage refers to the use of debt.) For example, the cash flow to total debt ratio, a measure of long-run debt repayment ability, improved in 1984 (increased 14.1 percent, following declines in 1982 and 1983).[11] In addition, the equity financing ratio, which measures the proportion of assets financed with equity versus debt, improved slightly in 1984, following decreases in 1981 through 1983.[12] This improvement in debt financing levels may imply that hospitals are beginning to rely less on debt and more on equity financing to acquire assets. Moreover, changes may reflect new debt refinancing strategies. Finally, improvement may be the result of increased operating profits that have generated greater levels of cash flow, thus reducing the need for some hospitals to borrow.

CAPITAL

Medicare now reimburses hospitals on a "reasonable-cost" basis for capital-related costs including: (1) depreciation, (2) taxes on land and depreciable assets, (3) leases and rentals, (4) costs of betterments and improvements, (5) costs of minor equipment, (6) interest, (7) insurance, (8) return on equity for proprietary providers, and (9) capital costs of related organizations.

Since these capital-related costs are treated as a pass-through, the system fails to provide incentives for hospitals to minimize overall investment costs. Instead, it promotes

insensitivity to interest rates and alternative financing methods. In addition, some hospitals have invested in services that exceed the demands of the market. Hospital behavior, however, may not completely follow these incentives. The uncertainty and risk associated with future capital payment policy may inhibit some inefficient asset acquisition.

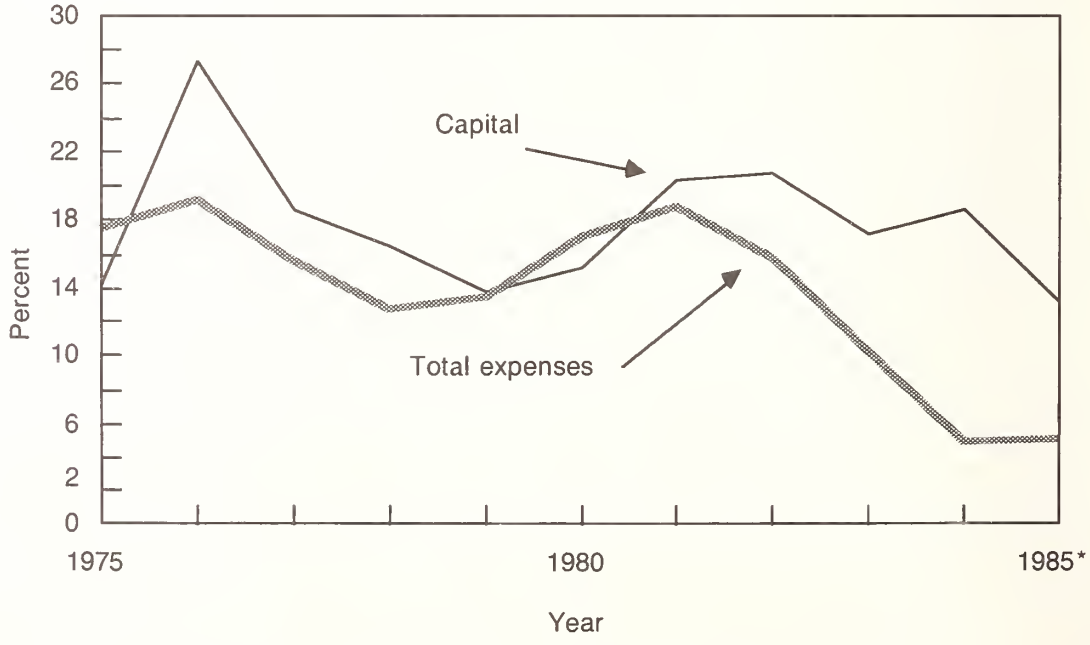
Under the existing cost-based approach, Medicare reimburses hospitals for capital based on Medicare utilization relative to total hospital utilization. Therefore, for hospitals with low occupancy rates, Medicare is paying for capital costs related to unoccupied beds. The amount paid, however, may be less than the current asset replacement value since capital reimbursement is based on the historical cost of assets. As a result, Medicare's policy for paying for excess capacity continues to be debated extensively.

The combined effect of PPS and the existing capital pass-through has introduced additional distorted incentives in capital spending. It provides incentives for hospitals to substitute capital for labor or other operating costs. This is because operating costs are reimbursed on a prospective fixed-price basis. By increasing capital spending, the hospital will receive greater total payments from Medicare. As a result, the hospital that can find ways to substitute capital for operating costs will receive more in total Medicare payments. This would occur even though the substitution may not be the optimal combination of these cost components.

According to information obtained from the AHA Panel Survey, capital costs are increasing more rapidly than total costs. For the period 1975 to 1985, the annual percentage increase for capital was greater than that for total costs for all years except 1980 (see Figure 5). Consequently, the capital/total cost and capital/operating cost ratios have increased, as Table 14 shows.

Continued high annual percentage increases in capital costs and increasing capital cost ratios reflect the impact of several capital-related activities. These include capital/labor substitution,

Figure 5.—Percent Increase in Hospital Capital and Total Costs from Prior Year



* Based on estimate derived through comparison of January to August 1985 with January to August 1984.

SOURCE: American Hospital Association Panel Survey Data.

facilities replacement activities, and fluctuations in interest rates. In addition, older plant is expressed in terms of historical dollars, whereas new plant is represented in more current, higher dollars. This also contributes to increased capital expenditures because the current costs of replacement or expansion are substituted for historical costs.

Table 14.—Capital/Total Cost and Capital/Operating Cost Ratios, 1980-1985 (Annual Percent Increase)

Year	Capital/ Total Cost	Capital/ Operating Cost
1980	6.2 (−1.6)	6.6 (−1.5)
1981	6.3 (+1.6)	6.7 (+1.5)
1982	6.5 (+3.2)	7.0 (+4.5)
1983	7.0 (+7.7)	7.5 (+7.2)
1984	7.9 (+12.9)	8.6 (+14.7)
1985*	8.3 (+5.1)	9.1 (+5.8)

* Data for 1985 represent information from January through August versus prior year data from the same period.

SOURCE: American Hospital Association Panel Survey Data.

REVISING MEDICARE CAPITAL PAYMENT POLICY

Determining a capital payment method under Medicare PPS will encompass several issues. The wide range of estimates for hospital capital expenditures in the 1980s highlights the difficulty in determining the absolute level that Medicare should fund. Moreover, the extent to which the payment system reflects differences in capital requirements among hospitals may affect the distributional consequences of the approach. Finally, the transition to a new capital payment system will require sensitivity to the long-term nature of hospital capital expenditures.

Notes to Chapter 4

1. U.S. Department of Health and Human Services, Health Care Financing Administration, "Report to the Congress: The Impact of the Medicare Hospital Prospective Payment System, 1984 Annual Report," unpublished report, Baltimore, MD, November 1985, 6-34.
2. U.S. Congress, General Accounting Office, "Use Of Unaudited Hospital Cost Data Resulted in Overstatement of Medicare's Prospective Payment System Rates," Report to Congress, HRD-85-74. Washington, DC, July 18, 1985. U.S. Congress, Congressional Budget Office, "Transition Impacts" memorandum, Washington, DC, December 6, 1985.
3. Financial statements, from which ratio values are derived, provide summary records of past performance. Statement amounts are expressed in historical dollars. Therefore, the changing value of the dollar may reduce the usefulness of certain ratios whose numerator and denominator are expressed in different terms. Second, there may be diversity in defining the individual elements comprising the ratio amounts, depending on the methods used for calculating depreciation, inventory, and other values. Finally, balance sheet information reflects a single point in time. These values fail to indicate short-term fluctuations in assets and equities occurring during the year.
4. The *operating margin ratio* is computed by dividing total operating revenue less operating expense by total operating revenue.
5. Third-party payers, such as Medicare, establish a contractual rate for services that is typically based on the cost of providing care for that payer's patients. The difference between hospital charges and the contractual rate is referred to as the "contractual allowance."

   "Bad debt" expense reflects an adjustment made to recognize the likelihood that some patients may not pay their bill for services rendered.

   "Charity care" deductions are given to patients who are relieved entirely or in part of their responsibilities due to their inability to pay for services.

   Services furnished at a "courtesy discount" are those services provided at no cost or at a reduced charge to certain groups of people (e.g., clergymen and families of deceased staff physicians).
6. The *deduction ratio* is computed by dividing deductions by gross patient service revenue.
7. The *current ratio* is calculated by dividing current assets by current liabilities.
8. The *days in patient accounts receivable ratio* is computed by dividing net patient accounts receivable by net patient service revenue and then dividing this amount by 365 days.
9. The *average payment period ratio* is calculated by dividing current liabilities by operating expenses less depreciation and then dividing this amount by 365 days.
10. The *total asset turnover ratio* is computed by dividing total operating revenue by total assets. This ratio is very sensitive to hospital's asset age, emphasizing assets stated in unadjusted historical costs.
11. The *cash flow to total debt ratio* is calculated by dividing excess of revenues over expenses plus depreciation by current liabilities plus long-term debt. Many believe that it is an important indicator of future financial problems or insolvency. A decrease in the value of this ratio may indicate a future debt repayment problem unless, however, the debt repayment schedule is extended.
12. The *equity financing ratio* is computed by dividing fund balance by total assets. Creditors usually view high values favorably because this implies less leverage and reduced possibility of insolvency. The equity financing ratio is affected by the differing ages of assets and the manner in which they were financed.

Chapter 5

Access to Quality Health Care

Chapter 5

Access to Quality Health Care

Changes in the utilization of hospital services by Medicare beneficiaries described in Chapters 2 and 3 may affect beneficiary access to health care and the quality of that care. Because the Prospective Payment Assessment Commission is committed to maintaining access to high-quality care, the Commission places a high priority on monitoring this aspect of care under PPS.

The changes in Medicare payment policy were expected to lead to more efficient delivery of inpatient care as hospitals responded to new incentives. Modifications in the organization and delivery of health care to increase efficiency could improve or worsen access to care and the outcomes of care.

It may, however, be difficult to compare care provided currently to beneficiaries with that of the past because quality review activities formerly were not intended to serve as a systematic evaluation of care for Medicare beneficiaries. Consequently, current observations regarding quality of care for Medicare beneficiaries could apply to health care both before and after implementation of PPS. Despite these limitations, it is possible to make some comments about the effect of PPS incentives on quality of care.

To assess quality of care under PPS, analysis should concentrate on the patient's health outcome after receiving care during an episode of illness. Unfortunately, relevant data for assessing patient outcomes are limited, forcing attention to other aspects of the patient care process that are believed to make favorable outcomes either more or less likely. For example, the quantity or quality of inpatient services could be affected by measures to lower costs, such as reductions in nursing services.[1]

The consequences of the steps hospitals have taken to reduce the cost of inpatient care for access to quality health care are examined in this chapter. The chapter first discusses changes in access to care that may occur as a result of PPS. It then examines changes in health care use and delivery that may have an effect on quality. The role of the Peer Review Organization in ensuring quality of care is also examined. Finally, current beneficiary and provider perceptions of access and quality are discussed because they may be useful in directing research on this topic.

ACCESS TO HEALTH CARE

Access could be reduced if payments do not meet the costs of efficiently delivering care to some groups of patients because of their condition. If, for example, payments do not adequately reflect differences in severity of illness, some patients may have difficulty obtaining access to necessary care.

The link between the adequacy of payments and quality of care, however, is not direct. Providing higher payments will not necessarily ensure appropriate health care, since the providers will use the additional payment at their discretion. In fact, access could be reduced if payments are sufficient but providers deliver care inefficiently.

A longer-term effect of inadequate payments may be that hospitals refrain from providing services or adopting new technologies that are inadequately compensated. This could decrease access for beneficiaries to certain services. On the other hand, the PPS incentive for hospitals to specialize and concentrate certain services could improve quality of care. A recent study of aged Medicare beneficiaries found that

mortality rates were lower for some procedures, coronary artery bypass surgery for example, in hospitals that perform many such procedures.[2]

Patients now leave the hospital sooner than they did before PPS was implemented, as indicated by a decline in the average length of stay. This decline is likely to place greater demand for post-discharge services (e.g., home health services, skilled nursing services). It is not known, however, whether these services will be available in sufficient quantities in all areas.

Access to Inpatient Care

The most recently available data indicate that since implementation of PPS, hospital closures have not increased substantially. In 1984, 34 community hospitals closed, but these closures have probably not seriously affected access for beneficiaries. In fact, this number of closures does not represent a substantial change from the level during the period 1981 to 1983. Hospitals that closed tended to be smaller than 200 beds and located in urban areas. In general, they were not the sole providers of hospital care in their counties.[3]

Increased Out-of-Pocket Expenditures for Beneficiaries

PPS may introduce increased financial barriers to hospital care. At the time PPS was enacted by the Congress, the public did not perceive that beneficiaries and their families would become responsible for a larger portion of their health care costs. Contrary to this belief, a larger portion of health care costs have been shifted to beneficiaries through higher premiums for Medicare supplemental coverage and through larger deductibles, greater use of services with coinsurance, and use of services not covered by Medicare. Because of limited data, however, the Commission cannot estimate the full extent of the increased beneficiary liability.

Since PPS, beneficiaries pay more for each hospital admission because the average cost per day for Medicare beneficiaries has risen. The increase in beneficiary payment occurred largely because the decline in the number of hospital days has resulted in higher average costs per hospital day.

The reduced average length of stay caused the Medicare Inpatient Deductible—equal to the cost of one day of care—to rise faster than it would have otherwise. The deductible rose from $400 in 1985 to $492 in 1986; about half of the increase occurred because of shorter average inpatient stays. In 1986, the increased cost-sharing due to reduced length of stay could shift about $550 million to Medicare beneficiaries. More than four-fifths of Medicare beneficiaries do not pay this directly from out-of-pocket funds because they are covered by supplemental private insurance or Medicaid. Nevertheless, increased cost-sharing increases premiums paid for these supplemental policies. Furthermore, the remaining beneficiaries are faced with increased out-of-pocket payments for their hospital care as a result of PPS.

The greater use of outpatient care—some of which is covered by Medicare Part B—could also raise out-of-pocket expenses. Medicare beneficiaries pay coinsurance of 20 percent for Medicare Part B services. In addition, they pay the entire cost of services not covered by Medicare. Supplemental "Medigap" policies often do not pay for services not covered by Medicare.

Out-of-pocket expenditures may be increased even more due to greater use of health care services that are not part of the Medicare package. Medicare coverage for long-term care services (nursing home and home health services) is limited. The program will cover nursing home services in a skilled nursing facility (SNF) for people requiring skilled nursing care or rehabilitation in an inpatient setting, but only for a relatively brief period. The average Medicare coverage for SNF care in 1980 was 30 days. Medicare does not cover the lower level of most nursing home care for which the average length of stay is 456 days.[4] Although much nursing home care is financed with Federal and state funds through the Medicaid program, roughly half of all expenditures for nursing home care are made by patients or their families.

Access to Post-Hospital Care

Changes in hospital care resulting from PPS incentives may affect beneficiaries' access to

post-acute care but few data are collected on patients after they are discharged. Under cost-based reimbursement, hospitals had fewer incentives to discharge patients early, since Medicare covered all days in which hospital-level care was provided. As hospitals seek to lower their costs in response to PPS incentives, the logical response has been to decrease the length of the inpatient stay, thereby increasing the demand for post-discharge services.

In some areas of the country, however, the availability of post-discharge care is limited. Furthermore, even if the increased demand for post-discharge services is met in an area, beneficiaries face increased out-of-pocket expenditures. These expenditures are for services that were provided formerly during an inpatient stay for no additional charge to the patient.

Use of Medicare-covered home health services rose in 1984 but probably not as much as might be expected in view of the decline in the average length of stay. The slight change in these services probably reflects the stringent criteria that must be met for Medicare coverage. As the use of home health services has grown, the administrative enforcement of these constraints has increased, particularly during the past 18 months. This has caused some providers and beneficiaries to believe that the coverage rules have changed.

Expenditures for home health services increased at the beginning of this decade, when the visit limit on home health services was eliminated and for-profit agencies were allowed to provide services. These expansions of the home health benefit did not alter the basic constraint that Medicare covers home health services only if services are "intermittent" and "skilled."

Providers report increased use of home health services since the beginning of PPS, but this increase has not been matched by an increase in home health visits covered by Medicare. Hospital billing records contain information about whether a patient was "discharged to home health care." Since these data are not verified to determine whether the patient actually received home health services, their accuracy is questionable. Nevertheless, the data provide some insight into the demand for home health services. During fiscal year 1984, 2.9 percent of discharges covered by PPS were supposed to receive home health services compared with 0.9 percent of discharges not covered by PPS.[5] In spite of an apparent rise in the number of beneficiaries discharged in need of home health services, Medicare-covered home health visits rose by 7.8 percent, less than half the increase in 1982 or 1983.[6]

An expected increase in the use of nursing home care was not reflected in higher Medicare admissions to skilled nursing facilities. Either patients or their families are purchasing these services or they are not being received. For the first ten months of 1984, Medicare admissions to skilled nursing facilities did not appear to have been higher than in 1983. Nevertheless, Medicare patient bills indicate that discharges to nursing homes more than doubled as hospitals came under PPS in fiscal year 1984. About 7.6 percent of patients discharged from PPS hospitals were discharged to nursing homes, while 2.8 percent discharged from hospitals not under PPS were reported as discharged to nursing homes.

A small portion of nursing home care qualifies for Medicare coverage; the bulk of nursing home care is longer term or less skilled than the care covered under Medicare. In many areas, there is a shortage of nursing home beds certified for Medicare reimbursement that provide the level of "skilled" care required for Medicare coverage.

The supply of nursing home beds of all types varies around the country, ranging from 22 per 1,000 elderly in Florida to 75 per 1,000 in Texas.[7] With an increased demand for post-hospital services, it is likely that availability of these services will be reduced in the short-run, both for patients who are discharged earlier and for other patients needing chronic services. In the longer run, if the increased demand persists, more post-discharge services are likely to become available.

Access to Uncompensated Care

The effect of Medicare's prospective payment system on levels of care provided to the uninsured, indigent population is uncertain. Traditionally, hospitals have financed uncompensated care for this population through surplus

revenue generated primarily from charge-paying patients. Cost-based Medicare payments did not cover these expenses. Because PPS permits hospitals to retain revenues in excess of costs, most hospitals will have more surplus to finance uncompensated care. This is reinforced because high-volume providers of uncompensated care tend to fare somewhat better than the average hospital.[8] On the other hand, greater cost-consciousness on the part of other hospitals may lead to a shift of additional uninsured, indigent patients to high-volume providers of uncompensated care, resulting in higher uncompensated care costs for these hospitals.

The provision of uncompensated care may nevertheless decline in the future because of low PPS rate increases relative to inflation and reduced payments from other payers. In fact, anticipated stringency of future hospital payments may influence levels of uncompensated care more than the current level of payments to high-volume providers of uncompensated care. Also, changes in traditional methods of financing uncompensated care, discussed in Chapter 6, may be curtailed as competitive forces become more prevalent in health care.

The disproportionate share adjustment recommended by ProPAC and now under consideration by the Congress would correct systematic underpayment for Medicare patients who receive care at hospitals with a disproportionately large proportion of low-income patients. It was not intended to remedy the problem of the uninsured. The adjustment applies only to costs incurred for treating Medicare patients, not to the expenses incurred for providing care to uninsured, indigent patients.

ASSESSING HEALTH CARE QUALITY UNDER PROSPECTIVE PAYMENT

To assess the quality of care now being provided to Medicare beneficiaries, the health outcome of the episode of illness must be examined. The changes in health care delivery and the process of medical care make it difficult to apply previous standards for measuring quality of care in terms of the structure or the process of care. Certain types of procedures performed on an inpatient basis at one time, such as cataract lens replacements, are now performed more commonly in the outpatient setting. Although this shift of services from inpatient to outpatient settings has been occurring for some time, PPS has probably hastened it. How the shift to ambulatory care will affect quality is uncertain.

Since a significant portion of care that had been provided during a hospital stay has been shifted to post-acute care settings, it will be necessary to assess the outcome over the entire episode of illness, rather than focusing solely on the inpatient stay. Studies that follow individual patients after their discharge into alternative care settings, including home care, will be required. These studies are of a long-term nature and will be expensive. Other studies that assess patients' conditions at the time of discharge would be useful in determining whether patients are being discharged prematurely.

The Relationship Between Shorter Length of Stay and Health Outcomes

The striking decline in length of stay for Medicare beneficiaries since the implementation of PPS has led some to conclude that quality of care has declined under this system. The decline in length of stay does not necessarily indicate that, on average, quality of care has fallen under PPS. Hospitals discharge Medicare beneficiaries at an earlier stage in their recovery than under cost-based reimbursement, but the implications of this change for patient outcomes vary. More research is needed before the effect of recent declines in average length of stay on quality will be understood.

Studies of the relationship between length of stay and health outcomes do not support conclusions regarding the effect of shorter stays on the health of all Medicare beneficiaries. Many studies suggest that for certain conditions

shorter inpatient stays do not adversely affect outcomes, provided that adequate post-discharge care is available. For the most part, these studies have not included the elderly and may not have detected changes in health status beyond a relatively short follow-up period.[9]

Because Medicare beneficiaries commonly have several treatable medical conditions, narrowing the scope of services provided during the hospital stay may increase the likelihood that care is poorly coordinated. Limiting care may therefore lead to a less favorable health outcome that, in the long-run, could be more costly both to the patient and to the Medicare program. While hospitals may respond to PPS incentives by limiting the care they provide to essential services, their concern for malpractice liability may act as a disincentive to excessive reductions.

Providing less care is not necessarily the same as providing lower-quality care, however. Complications can arise as a result of unnecessary testing and procedures, for example. In addition, more care is not equivalent to higher-quality care. The goal of policy, therefore, should be to ensure that appropriate care is provided. In determining appropriate care, judgment must be exercised in instances where more care adds to quality, yet the incremental difference may not be worth the additional costs.

Although beneficiaries may require a greater level of care following discharge, outcomes may not be affected if that care is provided either at home or in another facility, such as a nursing home. Thus, the quality of care since the implementation of PPS depends heavily on the capacity of nursing homes, home health agencies, and other long-term care providers to meet the needs of sicker patients. Currently, care provided in these settings to Medicare beneficiaries following their hospitalization is not systematically evaluated because there is no review mechanism in place.[10]

If PPS payments for certain conditions or certain types of cases are lower than the costs of providing adequate care, it becomes more likely that adequate care will not be delivered. Thus, modifying the structure of DRGs to create more homogeneous groups or reexamining outlier policy has the potential to improve quality of care. The Prospective Payment Assessment Commission has devoted substantial resources to this activity and may make recommendations for improving case-mix measurement after additional analysis has been completed.

Trends in Mortality Rates Among the Elderly

Mortality rates are commonly used as evidence of health outcomes, since they are easily measured. But many factors other than health care quality are likely to affect mortality rates. The examination of recent trends in the mortality rate by itself does not suggest a decline in the quality of care. In 1984, the first year following implementation of PPS, the mortality rate for the nation's elderly did not depart from the downward trend of the past decade.[11]

Mortality data are not likely to be sufficiently sensitive to changes occurring in health care to indicate improvements or declines in quality. Evidence that the mortality rate for the elderly did not depart from recent historical trends since the introduction of PPS indicates that the most undesired consequence, an increase in deaths, has not occurred. Changes in the functional status of patients following discharge, however, would not be reflected in mortality rates. More sensitive measures of quality will be gathered only after lengthy, expensive studies.

PRO Quality of Care Assessment Activities

Peer Review Organizations were assigned the primary responsibility to protect quality of care when PPS was designed. PROs were given the responsibility for verifying the validity of diagnostic and procedure information used in DRG assignment. They were also made responsible for reviewing the appropriateness of admissions, discharges, transfers, and care for outlier cases. PROs contract with HCFA to meet review objectives for all these activities. Thus, the PROs are still responsible for reviews that limit utilization—a goal which, if carried too far, could endanger quality of care.

The implementation of the PRO program has not been without problems. More than a year elapsed from the initiation of PPS until all of

the PRO contracts were signed. Subsequently, the PROs in Pennsylvania, Massachusetts, and South Carolina have been terminated, and a few others may be performing marginally. Several of the PROs had to renegotiate the objectives stated in their contracts because their initial estimates seemed unrealistic. Initially, the PROs were hampered by a significant delay between the discharge of the patient and receipt of the billing information about the admission from the fiscal intermediary. Additional information on the performance of PROs will be available from the review by SysteMetrics, the SuperPRO designated to review a sample of cases from each PRO.

Each PRO was required to develop at least five quality objectives. Utilization control, however, is a more familiar activity for many of the contractors. Most of the contractors previously functioned as Professional Standards Review Organizations (PSRO) whose primary responsibility was to limit utilization. In fact, a review of the quality objectives the PROs submitted reveals that many also focus on limiting utilization, rather than on ensuring that all necessary services are delivered. Some PROs engage in physician or provider education when quality problems are initially detected. Only when this action seems ineffective are other measures such as sanctions initiated. There is little evidence about whether these actions help to ensure the delivery of quality care during the hospital stay.

Another important mechanism of quality review involves review of readmissions within several days. Through this review, PROs can identify whether inadequate care during the initial hospital stay caused the patient to be readmitted. To help PROs determine whether the hospital care was adequate, the PRO manual prepared by HCFA specifies criteria for assessing a patient's medical stability at the time of discharge. Patients are considered medically unstable if, for example, they have a fever, postoperative wound drainage or bleeding, or abnormal laboratory values on the day of discharge.

This review offers some retrospective quality assurance for readmitted patients. But there are no data on the extent to which the criteria are applied to patients who are not readmitted or on the degree to which the criteria are used prospectively to prevent discharge of unstable patients. Another unanswered question is whether the threat of PRO action is an effective deterrent to the premature discharge of patients.

A broader question that the PROs are not really equipped to answer involves an assessment of the care during the entire episode of illness. Of critical concern, as stated above, is the adequacy of post-acute care. The PROs currently have no responsibility for assessing the quality of care delivered by nursing homes and home health agencies. Assessing inpatient care alone may not reveal the outcome of care. Outcomes can only be determined, in many cases, by evaluating the beneficiary well after the inpatient stay.

The extent of PRO quality monitoring may be increased as PROs renegotiate their contracts with HCFA. This process has recently begun. The new scope of work for PRO contracts appears to be seeking increased use of generic quality screening and review of patients' condition at the time of discharge. It is not known how much effort will be devoted to these functions. Care received by beneficiaries outside of the hospital will remain beyond the responsibility of PROs.

PERCEPTIONS OF THE QUALITY OF CARE

Some beneficiaries and providers perceive that the quality of care has deteriorated under PPS. In the absence of measures that demonstrate the change in quality, reported instances of low-quality health care may play a significant role in shaping public attitudes and public policy toward PPS.

Already, media coverage has drawn attention to instances where beneficiaries believe

their inpatient stay was too brief. In addition, substantial congressional attention has been focused on the so-called quicker and sicker pattern of hospital discharges.[12] Sufficient data, however, do not now exist to determine whether problems identified to date were caused by PPS. Accordingly, access to and quality of care under PPS require further study.

Beneficiary Perceptions of Unsatisfactory Inpatient Care

In general, patients' criticisms of health care quality center on the perception that they have been discharged too early rather than on the quality of care received during an inpatient stay. Some patients report being discharged from the hospital before they felt ready to leave. Others complain that discharge occurred before adequate arrangements had been made for post-acute care, either at home or in a nursing home. A few complaints have been made by relatives of beneficiaries who contend that adverse health consequences, including in some cases death, followed discharge. Finally, some beneficiaries believe that the shift in some procedures to outpatient settings may be inappropriate.[13]

Though considerable public attention has been focused on the quality of care issue under PPS, the study conducted for ProPAC did not uncover numerous instances of undesirable quality of care. Different news articles reported many of the same individuals' experiences. Although many of the instances deserve attention and may indicate deficiencies of the system, it is reassuring that relatively few incidents have been identified to date.

Understanding of Medicare Benefits Under Prospective Payment

In addition to a perception of reduced quality, many beneficiaries and their physicians mistakenly believe that Medicare now limits the number of days of care allowed during each hospitalization. In some instances, this is a perception that hospitals have fostered in their communications with beneficiaries. Some hospitals apparently regard the mean length of stay as a maximum number of days covered by the Medicare program, and have passed this misperception along to beneficiaries.

Beneficiaries appear to be unfamiliar with their right to appeal discharges they consider inappropriate to the Peer Review Organization. This lack of information extends to hospital discharge planners, who are often unaware of the process for appealing a discharge.

These widespread misperceptions could be remedied, in part, by more extensive beneficiary information about PPS. For example, at the time of admission, patients could be provided with a description of the prospective payment system and their rights to appeal.

Practitioners' Views of the Quality of Care

Several medical professional societies have attempted to gather information about the effect of PPS on quality of care, largely through surveys. These surveys solicit members' perceptions of problems, without gathering specific incidents. The validity of the surveys is questionable, however. These instruments often express the bias that quality of care has suffered under PPS and permit only limited responses. Further, the response rates to the surveys have typically not been high, so it is unclear whether the respondents are representative of the surveyed group.

Generally the results have shown that many practitioners perceive quality of care has declined or will eventually decline under PPS. On the other hand, some practitioners have noticed no adverse consequences for quality. The results of two surveys conducted separately by the American Medical Association and the American Society of Internal Medicine suggest two areas for further analysis.[14]

- Some hospitals may be discouraging complete treatment for patients with multiple conditions because DRG payments do not cover the expense of additional procedures.
- Some hospitals encourage discharge of Medicare patients to alternative facilities where they do not receive adequate care.

The perceptions of providers obtained through surveys correspond to some of the perceptions of beneficiaries. Though these surveys do not support definitive conclusions about the quality of care under PPS, they do suggest areas for further investigation.

Notes for Chapter 5

1. For a discussion of definition of quality of care and the evaluation of quality, see Avedis Donabedian, *Explorations in Quality Assessment and Monitoring, Vol. I: The Definition of Quality and Approaches to Its Assessment,* (Ann Arbor, MI: Health Administration Press, 1980).

2. Gerald Riley and James Lubitz, "Outcomes of Surgery Among the Medicare Aged: Surgical Volume and Mortality," *Health Care Financing Review,* 7(1):37-47, Fall 1985.

3. Ross Mullner, David L. McNeil, and Merwyn A. Landay, "Hospital Closures Remain Stable," *Hospitals,* 59(14):91-94, July 16, 1985.

4. Pamela Doty, Korbin Liu, and Joshua Weiner, "An Overview of Long-Term Care," *Health Care Financing Review,* 6(3):71, Spring 1985.

5. Data from 1984 PATBILL (based on 9.3 million cases, eliminating data from hospitals in waiver states and excluded providers).

6. U.S. Department of Health and Human Services, Health Care Financing Administration, Bureau of Data Management and Strategy, unpublished data, December 1985.

7. Discharges to skilled nursing facilities and intermediate care facilities are included together.

8. Steven Sheingold and Thomas Buchberger, "Will Medicare's Prospective Payment System Affect Hospital Provision of Uncompensated Care," paper presented at the American Public Health Association Convention, Washington, DC, November 18, 1985.

9. A review of studies of available evidence on the relationship between length of stay and health outcomes can be found in Mark Chassin, *Variation in Hospital Length of Stay: Their Relationship to Health Outcomes* (Health Technology Case Study #24), prepared for Office of Technology Assessment, U.S. Congress, OTA-HCS-24 (Washington, DC: U.S. Government Printing Office, August 1983).

10. HCFA has granted some pilot projects in Florida (and elsewhere) permission to have PROs review some aspects of care in skilled nursing facilities and home health agencies.

11. ProPAC staff analysis of National Center for Health Statistics data for the years 1968 through 1984.

12. U.S. Congress, Senate, Special Committee on Aging, "The Government's Role in Ensuring Quality," staff report, Washington, DC, November 12, 1985.

13. Beneficiary perceptions were obtained through a survey of major newspapers, congressional hearings, and Medicare beneficiary organizations. Results of the survey are reported in *Background Research on the Effects of Medicare PPS on Quality of Care and Development of a Case Study of the Effects of Shift of Services on Quality of Care,* prepared by Health Economics Research, Inc. under ProPAC contract No. T-31415512.

14. The American Medical Association received 389 responses that they believed represented 7,800 practicing physicians. About two-thirds of these respondents believed that quality had deteriorated under PPS. In a survey of 20,000 members of the American Society of Internal Medicine, 246 replies were received.

Chapter 6

Changes in Financing Health Services

Chapter 6

Changes in Financing Health Services

The adoption of PPS coincided with numerous changes in health care financing in the public and private sectors. Within the Medicare program, PPS encouraged a shift in the distribution of expenditures among covered services that began in the last decade. Several states have adopted DRG-based payment systems for hospital services financed by Medicaid. Private insurers are developing innovative arrangements for paying hospitals and other health care providers. A few private third-party payers have begun paying hospitals using DRGs. This chapter describes some of the changes in health care financing that are occurring concurrently with the implementation of PPS.

GROWTH OF MEDICARE EXPENDITURES FOR NON-HOSPITAL SERVICES

Increased use of home health care (see Chapter 2) and inflation have led to significantly higher expenditures for these services. Medicare expenditures for home health care were almost 14 times higher in 1984 than in 1974. Expenditures for skilled nursing facility care were 2.5 times higher, reflecting a slower rate of growth than that for home health. For both services, the growth in expenditures began well before the implementation of PPS (see Table 15).

Between 1974 and 1984, the distribution of total Medicare expenditures has also shifted. In 1974, inpatient care made up 70.8 percent of total Medicare expenditures. By 1984 it had decreased to 64.9 percent of total Medicare payments. During this same period, expenditures for physician services by Medicare has increased from 22.9 percent to 24.8 percent of payments to providers. Payment for other services has also increased since 1974.[1]

Table 15.—Medicare Expenditures for Post-Discharge Services, 1974-1984

Fiscal Year	Skilled Nursing Facility		Home Health Care	
	Expenditures (Millions)	Increase (Percent)	Expenditures (Millions)	Increase (Percent)
1974	$214	20%	$138	38%
1975	273	28	228	65
1976	308	13	339	49
1977	351	14	441	30
1978	354	1	543	23
1979	364	3	647	19
1980	387	6	772	19
1981	424	10	959	24
1982	454	7	1,176	23
1983	500	10	1,545	31
1984	545	9	1,898	23

SOURCE: U.S. Department of Health and Human Services, Health Care Financing Administration, Office of Financial and Actuarial Analysis.

Table 16.—Shift in Total Medicare Expenditures from Inpatient Services to Non-Hospital Services, 1974-1984

Fiscal Year	Inpatient Hospital Expenditures	Physician Expenditures	Other Expenditures*
1974	70.8%	22.9%	6.3%
1975	70.9	21.9	7.2
1976	69.9	22.0	8.1
1977	69.2	22.3	8.5
1978	69.3	22.1	8.6
1979	68.3	22.9	8.8
1980	67.9	23.2	8.9
1981	67.9	23.3	8.8
1982	67.3	23.4	9.3
1983	66.0	24.6	9.4
1984	64.9	24.8	10.3

* Includes outpatient hospital, skilled nursing facility, and home health care.

SOURCE: U.S. Department of Health and Human Services, Health Care Financing Administration, Office of Financial and Actuarial Analysis.

While expenditures for inpatient care as a percentage of total Medicare expenditures have been declining steadily for at least ten years, the two largest shifts occurred in the year before PPS and in the year hospitals began being paid under PPS (see Table 16). Therefore, while PPS did not initiate the shift of Medicare expenditures from inpatient services to non-hospital services, its implementation encourages this shift to continue.

THE USE OF DRGs BY STATE MEDICAID PROGRAMS

Since the adoption of PPS by Medicare, states have increased their use of DRG-based payment. Seven states have instituted Medicaid prospective payment plans based on DRGs; six others are committed to introducing similar systems.[2] State Medicaid programs using DRGs resemble PPS in some regards but differ in others. Like Medicare, state Medicaid programs have policy commitments to integrate into the rate structure cost-related factors such as capital and indirect medical education that affect the economic performance of the hospital. States vary in the degree to which they have adopted features of the Medicare program that incorporate these factors into the DRG payments.

Peer Groups

In some programs, hospitals that are similar in terms of size, teaching status, and geographic location are categorized into "peer groups" to create group-specific average payment rates. The rates are based on a peer group's average costs to provide greater equity than might be attained using statewide average rates. The formation of hospital peer groups helps to adjust for characteristics that affect hospital costs, but are beyond the hospital's control.

Two Medicaid programs and the New Jersey all-payer system use peer groups as a method to establish DRG payment rates. The formation of these peer groups is based primarily on the criteria listed above, although the grouping methods developed by the states differ in complexity. One state, for example, has divided hospitals into seven different groups based on hospital characteristics, including teaching activity, volume of Medicaid patients, environmental factors, and historical costs per discharge.

In those states having a transition, the DRG rates move from hospital-specific to peer-group-specific over a period of time. The two-year transition period in one state is illustrative. The

payment rates moved from 75 percent to 50 percent hospital-specific in the first year. They are scheduled to be 100 percent peer group average rates in July 1986.

DRG Classification and Weights

All the state programs, except Utah, used state-specific data to calculate DRG weights (Utah used the Medicare weights discounted by 20 percent). The data sources used include hospital cost report data, paid claims files, and Medicaid claims data. Many Medicaid programs used a blend of hospital-specific base-year costs and regional average costs to calculate their DRG rates. This methodology is similar to Medicare's. While PPS uses nine Census Divisions to develop its regional costs, the Medicaid programs use either peer group average costs or statewide average costs.

Adjustments

The Medicare program adjusts for more variables that affect a hospital's costs than do most state Medicaid programs. While Medicare adjusts for direct teaching costs, indirect teaching costs, and wage rate variations, not all state Medicaid programs make these adjustments.

Payment for Teaching Costs.—Most state Medicaid programs use the PPS methodology to pay for direct medical education costs. The Medicare program excludes direct medical education costs from the DRG rates and pays for it on the basis of reasonable costs. While some states use Medicare's definition of allowable costs, others have established their own definitions.

Unlike PPS, most Medicaid programs do not make an adjustment for indirect costs of medical education programs in the DRG rate. The states that use peer groups have put teaching hospitals into a separate group so that the additional costs associated with teaching will be accounted for in the peer group average rates. Michigan, a state that does not use peer groups, increases average payment per discharge for indirect costs of medical education in a manner similar to Medicare, but the adjustment is only about half as large as the current Medicare adjustment. Other states include the indirect costs of medical education in calculation of base line costs.

Payment for Capital Costs.—Medicare currently reimburses hospitals on a reasonable-cost basis for capital-related costs, as discussed in Chapter 4. Apparently, many of the state programs are doing the same, awaiting the Administration's decision on how to incorporate capital into the DRG rates before developing their own approaches. Some states, however, have instituted mechanisms to pay for capital. New Jersey pays for capital through a Capital Facility Formula Allowance (CFFA) that is computed for each facility. Ohio provides a capital allowance for each hospital based on the relationship between a hospital's inpatient capital-related costs and total inpatient costs. In Michigan, capital is paid for as an add-on to the base DRG rate.

Geographic Adjustments.—Medicaid programs vary in the adjustments that they make for variations in wages. The states that use peer groups make no specific adjustments for wage rates, since the peer grouping methodology accounts for these variations. Other states either make hospital-specific or a blend of hospital-specific and statewide adjustments for variations in wage rates.

Outlier and Transfer Policy

The Medicare program pays for both day and cost outliers. Under current regulations, day outliers are cases that exceed the mean length of stay for a given DRG by 22 days or are 1.94 standard deviations from the geometric mean length of stay. Cost outliers are cases that exceed double the DRG rate or $13,000, whichever is larger. Outlier payments are intended to be about 5 or 6 percent of Medicare inpatient expenditures, although the actual amount can vary from year to year.

While not all the state programs recognize cost outliers, most pay for day outliers. The methods used to determine outlier payments closely resemble those of PPS. In general, cases must exceed the geometric mean length of stay by two or three standard deviations. Hospitals receive an additional 60 percent of a per-diem

rate for days that exceed the threshold. Some Medicaid programs, however, lower the threshold for the burn and neonatal DRGs.

Under PPS, the transferring hospital receives a per-diem rate (except for DRGs 385 and 456), and the full DRG rate is paid to the discharging hospital. Some Medicaid programs follow this methodology, while others pay a per diem to both the transferring and discharging hospital. Michigan requires a physician to obtain authorization for the transfer from the Prior Authorization Case Evaluation (PACE) system before transferring a patient. If the transfer is approved, the transferring hospital receives the per-diem payment.

Reviewing, Modifying, and Updating the Rate

State Medicaid programs differ slightly in their frequency of recalibration. Pennsylvania requires updating the statewide relative DRG weights every year, while Michigan recalibrates at least every three years. Ohio, however, requires recalibration only if the difference between the reported costs for the base year inflated to the current year and the most recent cost information exceeds 10 percent.

State Medicaid programs update peer group or statewide average rates only for inflation, as measured by the hospital market basket. Medicare considers other factors that may affect hospital costs in determining the appropriate update factor.

Budget Ceiling or Budget Neutrality

As mentioned in Chapter 4, the PPS statute required that the aggregate expenditures for inpatient operating costs for fiscal year 1984 and fiscal year 1985 not exceed payments that would have been made under policies that prevailed before implementation of PPS. State Medicaid programs are also operating under budget-neutrality provisions. Payments made by the state Medicaid program using a DRG-based system cannot exceed payments that would have been made under the system previously used.

PRIVATE THIRD-PARTY PAYERS

Faced with a decreasing admission rate and shorter lengths of stay, many hospitals have been willing to negotiate alternative payment arrangements with private third-party payers. This trend, coupled with private third-party payers' efforts to reduce expenditures, has led to adoption of DRG-based payment, managed care, and capitation.

The emergence of competitive forces in health care is illustrated by the rapid growth of HMO enrollment. From July 1984 to June 1985, enrollment in HMOs increased 24.9 percent, while the number of HMOs increased 28.9 percent. Those HMOs classified as independent practice associations (IPA) increased the most dramatically.[3] Almost three-quarters of the new HMOs were IPAs.

Use of DRGs by Blue Cross/Blue Shield Plans

Seven Blue Cross/Blue Shield plans have implemented DRG-based payment systems and another three plans are involved in pilot programs using DRGs.[4] These plans differ in structure and vary in the degree to which they have adopted features of the Medicare prospective payment system. Descriptions of these plans reveal that they are similar to PPS in some respects but substantially different in others.

Peer Groups.—Many of the BC/BS plans with fully implemented systems use peer groups in determining DRG rates. The plans vary in the specific criteria used to categorize hospitals, but all employ some combination of teaching status, size, and geographic location. A peer group average rate is calculated for each DRG based on charge data collected from the hospitals in that peer group. All the hospitals in a given peer group then receive the same payment.

DRG Classification and Weights.—The DRG classification system was originally constructed using data bases from a national sample of acute care hospitals. While most plans use all 468 DRGs, some have found it more efficient to use only the higher-frequency DRGs. In one pilot

project involving the state's largest volume teaching hospital, for example, one plan found that 150 DRGs accounted for approximately 90 percent of discharges. The plan chose to use DRG-based payment only for cases that fell into those 150 DRGs. Other plans have had similar findings and have varied the number of DRGs used by peer groups and by geographic location (e.g., urban-rural). Hospitals are paid a percentage of charges for those cases that do not fall into a DRG.

The mechanisms used to calculate the payment amounts for the DRGs differ among BC/BS plans. While all the plans use hospital charge data, the calculations differ.

Only two plans use weights in their payment methodology. One plan uses the actual Medicare weights, but it will likely switch to hospital-specific or peer-group-specific weights after the first year of the program. The other plan calculates a DRG weight using fiscal year 1984 charge data collected from the hospitals participating in its program. The weight is then multiplied by a hospital-specific average charge per discharge to reach the payment amount.

One plan calculated a single DRG rate for each DRG using 1983-84 hospital charge data. In general, hospitals are paid the DRG rate but adjustments are made in some instances. Another plan converted charges to costs by using a cost-to-charge ratio. It then calculated a single DRG-specific base rate that is adjusted for capital, teaching, and bad debt according to a weighted average for each.

Most of the plans, however, have separated participating hospitals into peer groups and have calculated a distinct DRG payment for each peer group. A peer-group-specific rate for each DRG is calculated based on the average charges of the hospitals in that peer group.

Adjustments.—The ten BC/BS plans with DRG payment programs make limited adjustments for teaching, capital, and wage rate variation. Most of the plans indicated that any need for adjustments is obviated by using peer groups and hospital charge data in calculating the DRG payment. The BC/BS plans believe that any higher hospital costs that may be incurred due to capital or a higher wage rate will be incorporated into the hospitals' charges. Similarly, grouping like hospitals limits the need for hospital-specific adjustments (e.g., teaching, wage rate variations). Factors that might cause higher costs for certain types of hospitals are recognized by the peer group rate.

Outliers.—Most of the BC/BS plans have either cost or length of stay outliers. The outlier policies differ from those of Medicare's in three ways:

- Risk-sharing provisions
- Payment for only length of stay or cost outliers payments (rather than both), and
- Use of high and low thresholds (rather than high only).

Two BC/BS plans have risk-sharing provisions. These provisions operate on a case-by-case basis and allow for both the hospital and the plan to share in gains and losses. Specifically, if the hospital's charges are higher or lower than the DRG payment, the hospital and BC/BS share in the gains or losses.

While BC/BS payment for length of stay outliers is similar to Medicare, most BC/BS plans pay 100 percent of the per-diem rate. Medicare pays 60 percent of the per-diem rate. If the length of stay for a case is below a lower threshold, then the hospital is paid the lesser of the DRG payment or charges.

The thresholds for cost outliers vary among plans. In addition to the DRG rate, one plan pays the difference between hospital charges and 2.25 times DRG rate. Another plan has an "extraordinary case" policy. This policy will pay for 60 percent of the difference between the hospital's costs and the DRG payment, if costs are 150 percent greater than the DRG rate and the loss exceeds $5,000 (after the risk-sharing provision). A third plan that pays for length of stay outliers has a catastrophic policy based on charges. If a hospital's charges are three times the DRG rate, BC/BS will pay 90 percent of charges. One plan does not have an outlier policy. Since outliers were included in the calculation of the DRG rates, this plan believes there is no need for a separate outlier payment.

Changes in Reimbursement by Other Third-Party Payers

While the use of DRG-based prospective payment has increased among Medicaid programs and BC/BS plans, the commercial insurance industry has had only limited success in developing DRG-based payment. With the exception of New Jersey, where all insurers pay on the basis of DRGs, there are only a few areas where insurance companies have adopted DRG-based payment. Because of their relatively small market shares, commercial insurers may not be able to set a fixed per-case payment that hospitals will accept as payment in full.

Nevertheless, to remain competitive, insurance companies have pursued alternative financing approaches to avoid paying for hospital care at the prices (charges) set by hospitals themselves. Insurance companies appear to be experiencing more success in pursuing other prudent purchaser approaches, such as developing PPO arrangements, promoting and developing HMOs, and adopting patient management programs.[5]

While these innovations began before PPS, its implementation has helped to create a favorable environment for the growth of these cost-containment measures. Fewer admissions and decreased lengths of stay have created excess hospital capacity. Consequently, hospitals have been more willing to negotiate discounts and other alternative arrangements with third-party payers.

FINANCING UNCOMPENSATED CARE

The emergence of competitive forces in health care may curtail the provision of care to uninsured, indigent patients. Hospital provision of uncompensated care — charity care and bad debts — has been partly financed through private-sector payments that exceed the costs of care. Some refer to this as "cost-shifting" because not all payers share proportionately in paying these expenses. Public hospitals and private hospitals charge some patients more than the actual cost of their care, in part, to offset the expense of uncompensated care.[6] In addition, public hospitals receive local and state government revenue to finance care for patients unable to pay for their own expenses.

In the past, profits have come from patients who pay actual hospital charges — patients with commercial insurance and some Blue Cross plans and patients who pay their own bills. Because many hospitals are not paid on the basis of charges for most patients, the costs of uncompensated care are not distributed evenly across hospital users. According to estimates prepared by the Health Insurance Association of America, commercial insurers and other charge-payers paid $3.3 billion more than their share of the cost of uncompensated care because Medicare and Medicaid do not pay these costs. This amount has been gradually rising in recent years.[7]

Hospitals may find it increasingly difficult to finance uncompensated care as insurance companies further limit hospital payments. In a competitive environment, price will approach the actual cost of caring for an additional patient with no allowance for charity care or bad debt. At the same time that this method of financing uncompensated care may be eroding, there may be increasing need. State limits on Medicaid programs and increased numbers of persons without coverage could leave more persons unable to pay for their own hospital care.

CONTINUED INNOVATION IN HOSPITAL FINANCING

The widespread changes occurring in health care financing make it difficult to isolate the effect of Medicare's PPS on change in health care. In addition, public and private third-party payers will continue innovation in the delivery and financing of health care in the years ahead. Many of these changes will influence health care in ways that are similar to PPS. While it appears that hospitals have begun responding to incentives for more efficient delivery of inpatient care, substantial analysis must be completed before the full effect of these changes for access and quality can be determined.

Notes to Chapter 6

1. Includes outpatient hospital, skilled nursing facility, and home health care.

2. Michigan, Minnesota, Ohio, Pennsylvania, South Dakota, Utah, and Washington have already instituted payment based on DRGs. Connecticut, West Virginia, Montana, Oregon, South Carolina, and Texas plan to implement similar payment systems in the near future.

3. An independent practice association (IPA) HMO uses one or more of the following arrangements:

   - Directly contracts with physicians in independent practice;
   - Contracts with one or more associations of physicians in independent practice;
   - Contracts with one or more multispecialty group practices (but the plan is predominately organized around solo/single specialty practices).

4. Plans in Kansas, Oklahoma, Arizona, Nebraska, Michigan, Florida, and Mississippi have begun to pay at least some inpatient hospital stays using DRGs. In addition, Pennsylvania, Oregon, and Missouri have pilot programs using DRGs for payment. Information on the use of DRGs by Blue Cross and Blue Shield Plans was obtained through telephone interviews conducted by ProPAC.

5. Preferred provider organizations may enable insurers to reduce the amount of hospital claims. One type of PPO contracts for discounts with hospitals and then motivates insured patients to choose those hospitals. A second type does not contract directly with hospitals, but motivates patients to choose hospitals that have relatively modest levels of charges. Although many PPO arrangements are being negotiated, PPOs are not yet operating on a large-scale basis.

6. Traditionally most hospitals use two sets of payment scales, a contractual rate that applies to certain payers, and charges that apply to other payers. Hospitals are paid on the basis of charges for only some of their patients. They accept a contractual rate for Medicare, Medicaid, and Blue Cross patients. The contractual rate is intended to cover the cost of the care the hospital provides to that payer's patients. It often does not include a proportionate share of the cost of care provided to non-paying patients.

   In an attempt to ensure hospital solvency, hospitals set charges for the charge-paying patients high enough to recover the costs of uncompensated care. The greater the hospital's uncompensated care load, and the smaller the base of charge-paying patients, the higher those charges must be set. In some cases it may not be possible to raise charges without limit because higher charges result in more unpaid accounts.

7. Dave Llewellyn, Health Insurance Association of America, personal communication, Washington, DC, February 3, 1986.

APPENDIXES

Appendix A

Changes in Average Length of Stay and Charges

Table A-1.—Percent Change in Average Length of Stay for Pre-PPS Compared with Post-PPS Discharges During Fiscal Year 1984, by DRG Type

Census Division		Routine Care			Special Care			Total		
		Surg	Med	Pair	Surg	Med	Pair	Surg	Med	Pair
New England	Urban	9.1%	−5.3%	12.4%	20.0%	11.2%	111.4%	8.9%	−4.7%	18.5%
	Rural	−3.7	−4.6	16.9	−0.9	−23.4	−50.6	−3.7	−6.6	10.1
Mid Atlantic	Urban	−12.4	−19.2	−15.5	−12.2	2.4	−15.8	−12.2	−17.2	−15.9
	Rural	−11.8	−16.1	−13.1	−3.2	−6.5	43.1	−11.5	−15.6	−6.7
South Atlantic	Urban	8.2	−11.8	−2.6	32.9	4.9	14.3	8.7	−10.6	−0.5
	Rural	−0.3	−10.6	−13.1	1.0	11.5	−41.9	−0.3	−10.3	−16.6
E.N. Central	Urban	−1.6	−9.1	9.2	9.9	3.4	−38.8	−1.4	−8.1	−1.4
	Rural	−1.3	−11.1	−4.6	9.4	2.4	31.5	−1.0	−10.2	−2.6
E.S. Central	Urban	−2.8	−6.5	−0.8	−13.5	−7.4	7.2	−2.9	−6.3	1.0
	Rural	−8.7	−10.7	−8.7	−26.5	−8.6	−24.7	−9.6	−10.8	−9.9
W.N. Central	Urban	−4.7	−7.5	−7.0	3.0	−9.4	−24.2	−4.5	−7.8	−11.8
	Rural	−5.8	−11.2	−7.2	−4.2	−9.0	−35.4	−5.8	−11.2	9.0
W.S. Central	Urban	−7.8	−11.5	−2.6	−8.3	11.0	25.5	−7.8	−9.5	1.7
	Rural	0.1	−9.5	−8.3	10.5	−5.6	7.7	0.6	−9.3	−7.5
Mountain	Urban	7.6	−12.5	−1.3	14.7	33.1	14.9	7.8	−8.5	0.9
	Rural	1.9	−9.5	−6.1	−3.7	−0.2	−9.0	1.5	−9.0	−6.6
Pacific	Urban	5.0	−6.7	7.5	0.1	−2.2	17.6	4.8	−6.9	7.4
	Rural	−1.4	−16.2	12.4	5.6	4.1	−38.4	−1.4	−14.4	7.5
National	Urban	−1.9	−13.9	−3.2	7.1	−1.6	3.0	−1.7	−12.9	−2.9
	Rural	−3.5	−11.1	−7.4	−0.3	−4.4	−23.7	−3.5	−11.0	−9.0

SOURCE: ProPAC calculations based PATBILL (1984) data. Cases classified as LOS and cost outliers have been excluded from this table.

Table A-2.—Percent Change in Average Length of Stay for Calendar Year 1981 Compared with Fiscal Year 1984 Discharges, by DRG Type

Census Division		Routine Care			Special Care			Total		
		Surg	Med	Pair	Surg	Med	Pair	Surg	Med	Pair
New England	Urban	−8.4%	−10.4%	3.2%	−4.1%	19.8%	−3.4%	−8.1%	−8.0%	3.7%
	Rural	−13.6	−10.9	14.4	−12.8	23.9	−17.2	−13.5	−8.5	11.4
Mid Atlantic	Urban	−8.0	−8.4	−2.0	−8.5	13.3	14.9	−7.8	−6.3	0.8
	Rural	−6.4	−5.7	−8.2	15.0	19.8	17.1	−5.5	−3.2	−5.1
South Atlantic	Urban	−0.3	−14.6	−6.5	6.8	27.9	11.5	0.1	−11.3	−3.0
	Rural	0.1	−13.3	4.6	11.1	34.9	−0.1	0.7	−9.8	4.8
E.N. Central	Urban	−13.6	−13.6	−8.2	3.3	33.2	16.6	−13.2	−10.6	−4.3
	Rural	−15.2	−13.1	−4.8	16.8	51.3	18.7	−14.4	−10.0	−3.1
E.S. Central	Urban	−9.4	−11.9	−12.3	−4.6	51.3	4.1	−9.1	−8.0	−9.3
	Rural	−8.0	−13.9	−12.8	35.9	66.6	−1.7	−6.7	−11.0	−11.9
W.N. Central	Urban	−15.9	−15.1	−4.4	2.3	45.3	7.4	−15.4	−10.8	−1.4
	Rural	−8.5	−13.7	−6.6	23.3	51.7	−36.2	−7.7	−11.1	−7.6
W.S. Central	Urban	2.5	−12.0	−6.5	13.9	31.3	29.1	2.9	−8.8	−0.2
	Rural	−7.6	−11.5	−13.7	1.9	43.1	−42.7	−7.0	−9.1	−15.4
Mountain	Urban	4.4	−17.6	−10.3	−2.6	10.7	25.0	4.5	−15.0	−2.7
	Rural	10.7	−10.4	−16.9	58.3	17.3	−40.5	12.0	−8.5	−18.5
Pacific	Urban	−1.6	−19.3	−10.5	4.2	19.3	−15.0	−1.3	−15.1	−10.2
	Rural	−15.5	−17.7	−11.3	−9.4	33.0	4.0	−15.1	−13.6	−9.0
National	Urban	−7.1	−11.0	−6.1	0.2	36.5	16.1	−6.7	−7.4	−2.0
	Rural	−8.1	−12.6	−6.5	17.1	41.7	−9.9	−7.3	−9.6	−6.4

SOURCE: ProPAC calculations based on MEDPAR (1981) and PATBILL (1984) data. Cases classified as LOS and cost outliers have been excluded from this table. Outlier cases for 1981 were simulated using fiscal year 1984 LOS cutoffs. Fiscal year 1984 cost outlier thresholds were lowered to reflect the inflation in charges between 1981 and 1984.

Table A-3.—Percent Change in Average Standardized Charges for Pre-PPS Compared with Post-PPS Discharges During Fiscal Year 1984, by DRG Type

Census Division		Routine Care			Special Care			Ancillary Services			Total		
		Surg	Med	Pair	Surg	Med	Pair	Surg	Med	Pair	Surg	Med	Pair
New England	Urban	7.3%	−5.2%	11.5%	29.3%	14.7%	121.5%	−2.1%	−5.0%	69.7%	1.1%	−4.2%	52.0%
	Rural	3.4	2.2	19.8	3.0	−20.1	−68.4	−0.2	−7.4	−47.5	1.0	−4.6	−30.1
Mid Atlantic	Urban	3.7	−2.1	−4.5	11.6	22.6	−2.5	37.3	22.7	25.0	24.5	11.3	12.8
	Rural	2.6	−2.9	0.4	11.9	12.0	69.6	14.1	10.2	32.2	10.7	4.5	26.3
South Atlantic	Urban	8.2	−11.5	−5.4	27.0	−0.2	0.8	18.8	3.5	17.8	15.8	−2.5	10.8
	Rural	−0.6	−10.3	−16.1	3.1	9.1	−47.2	6.0	−9.1	−35.5	4.1	−9.9	−32.1
E.N. Central	Urban	1.6	−6.6	13.9	14.3	4.8	−26.2	5.0	−3.3	−5.2	4.0	−4.3	−4.2
	Rural	−1.3	−9.4	−4.7	12.2	1.5	41.6	5.3	−2.7	16.8	3.5	−5.5	10.4
E.S. Central	Urban	−0.1	−5.1	5.2	−14.8	−10.5	12.9	4.0	−0.4	3.7	2.8	−2.6	4.7
	Rural	−13.2	−17.3	−20.6	−25.1	−14.5	−21.3	−4.7	−6.3	−14.8	−7.2	−10.7	−17.0
W.N. Central	Urban	−0.3	−4.6	−5.6	9.1	−5.2	−15.5	3.4	−1.8	−2.4	2.4	−3.2	−4.9
	Rural	1.4	−5.3	−1.6	−1.2	−4.0	−28.7	−0.5	−3.5	−3.2	0.0	−4.4	−4.1
W.S. Central	Urban	−8.1	−12.0	−3.3	−8.8	7.2	19.4	−0.2	−5.1	3.1	−2.4	−6.5	2.6
	Rural	0.1	−10.1	−8.2	8.0	−8.4	6.6	−2.9	−12.7	−8.2	−1.8	−11.7	−7.9
Mountain	Urban	12.8	−8.8	1.5	13.4	24.9	6.6	10.5	−7.3	−6.7	11.4	−5.2	−6.2
	Rural	6.5	−6.1	−2.0	2.7	0.1	−5.7	11.0	−5.0	−2.4	9.2	−5.1	−3.1
Pacific	Urban	11.3	−1.3	7.5	3.7	0.9	12.8	1.9	−9.3	6.2	4.6	−5.7	5.3
	Rural	−0.6	−13.7	13.2	2.4	0.5	−40.8	−1.5	−15.7	12.6	−1.3	−13.5	8.9
National	Urban	0.1	−11.9	−4.2	13.0	2.4	4.9	14.2	4.1	15.5	9.6	−2.7	9.3
	Rural	−2.7	−11.4	−10.9	2.2	−5.0	−25.7	4.9	−3.3	−12.3	2.7	−6.9	−13.1

SOURCE: ProPAC calculations based PATBILL (1984) data. Cases classified as LOS and cost outliers have been excluded from this table.

Table A-4.—Percent Change in Average Standardized Ancillary Charges for Pre-PPS Compared with Post-PPS Discharges During Fiscal Year 1984, by DRG Type

Census Division		Operating Room			Anesthesiology			Pharmacy			Laboratory		
		Surg	Med	Pair	Surg	Med	Pair	Surg	Med	Pair	Surg	Med	Pair
New England	Urban	3.4%	−10.4%	112.5%	−7.5%	−12.2%	30.6%	−2.4%	−5.4%	17.7%	6.2%	−11.8%	16.4%
	Rural	−14.5	−19.9	−87.4	26.1	6.7	−9.4	−1.2	−8.1	−13.8	−0.8	−0.4	−30.3
Mid Atlantic	Urban	33.3	17.5	8.0	44.7	23.2	42.4	13.7	10.3	4.5	19.2	21.0	20.0
	Rural	27.8	5.9	26.0	18.5	9.0	4.6	6.9	6.8	23.1	1.9	11.4	11.8
South Atlantic	Urban	12.4	−9.0	−5.0	26.6	9.2	44.2	16.5	3.6	9.8	23.1	−2.7	−4.7
	Rural	14.8	−1.9	−88.6	5.5	−9.1	−12.1	7.9	−2.2	−7.8	10.7	−1.7	5.4
E.N. Central	Urban	0.7	−7.9	−15.3	4.6	−3.5	−4.2	4.4	−3.6	−2.5	6.7	−1.1	2.4
	Rural	−1.6	−14.4	82.3	9.4	0.4	14.2	1.4	−0.5	6.8	8.5	0.0	17.9
E.S. Central	Urban	5.1	−11.5	2.4	3.9	−0.9	8.4	3.3	2.0	3.9	0.6	−2.5	−24.3
	Rural	−14.2	−17.6	−51.6	1.9	3.4	−7.0	−6.7	−6.1	−15.0	−3.9	2.7	4.0
W.N. Central	Urban	−5.6	64.5	−6.9	5.7	−5.4	−5.0	5.4	−2.1	8.7	9.2	−2.7	27.9
	Rural	−6.6	86.3	21.9	−3.0	−7.6	−6.3	0.7	−1.5	1.2	2.9	3.7	11.7
W.S. Central	Urban	−5.8	−21.2	6.8	2.4	−2.8	0.4	−0.8	−3.6	7.1	−5.2	−1.8	−4.0
	Rural	7.6	−10.4	−25.2	0.0	−13.3	0.2	−0.4	−11.4	−9.9	−0.2	−3.8	−10.5
Mountain	Urban	−5.8	−14.3	14.3	16.6	−7.5	−2.4	11.9	−5.5	−13.0	15.3	−6.9	−11.4
	Rural	6.9	−27.4	69.6	6.4	−3.5	−7.3	10.9	−5.8	−3.6	13.9	−10.2	−4.9
Pacific	Urban	1.8	−3.8	2.8	1.8	−8.7	5.0	2.6	−7.9	9.7	10.9	0.9	26.5
	Rural	−7.8	5.5	179.5	−9.6	−21.5	20.3	−4.4	−11.4	7.8	12.6	3.1	14.9
National	Urban	6.9	1.2	9.6	22.9	14.3	24.8	6.7	−3.2	7.7	8.1	0.3	6.3
	Rural	−1.6	2.4	−49.4	10.1	1.4	5.7	3.1	−3.3	−5.0	5.2	0.2	0.0

Continued on next page

Table A-4.—Continued

Census Division		Radiology			Inhalation Therapy			All Other		
		Surg	Med	Pair	Surg	Med	Pair	Surg	Med	Pair
New England	Urban	−44.9%	−54.3%	74.0%	10.8%	−6.9%	64.0%	0.2%	3.2%	130.9%
	Rural	−15.4	−39.4	−82.7	18.6	17.7	−4.8	7.2	−25.3	−55.3
Mid Atlantic	Urban	155.0	106.4	192.9	42.3	24.1	40.4	34.3	36.0	31.2
	Rural	57.5	28.0	90.1	1.6	8.4	24.5	−4.1	15.1	57.8
South Atlantic	Urban	30.9	7.6	13.9	26.2	5.4	65.6	18.3	1.1	19.6
	Rural	56.2	−0.1	−75.6	7.7	−9.8	−43.4	−4.1	−16.1	−49.0
E.N. Central	Urban	−0.9	−26.4	26.1	11.9	−0.3	−20.1	10.9	−4.8	0.7
	Rural	−5.3	−4.6	−57.7	−1.3	−12.1	5.4	16.1	−2.4	12.3
E.S. Central	Urban	−3.5	9.0	−9.4	−2.3	−3.6	−14.4	5.1	0.6	12.9
	Rural	−14.4	−13.0	−42.0	−4.8	−6.6	12.7	−0.2	−17.6	−16.7
W.N. Central	Urban	3.8	−16.4	−1.3	13.1	6.2	−23.2	13.4	−4.6	1.4
	Rural	3.9	−16.6	−16.6	−8.3	−4.5	−8.1	7.1	−5.5	−8.6
W.S. Central	Urban	−5.6	−27.4	−29.0	−6.6	−6.0	1.1	4.3	−9.0	4.1
	Rural	−14.0	−18.7	−55.9	5.0	−10.0	−10.7	−10.0	−18.3	−12.2
Mountain	Urban	−11.0	28.0	24.9	13.4	−13.4	−11.6	26.5	−5.7	−20.5
	Rural	−1.4	−25.6	85.2	14.7	−12.6	−0.3	18.0	2.9	−9.5
Pacific	Urban	9.0	−14.9	2.3	0.2	−12.1	−13.4	0.4	−12.3	9.4
	Rural	−0.6	−4.4	129.6	−0.6	−21.2	30.7	5.5	−16.8	1.6
National	Urban	11.6	−14.7	20.3	21.1	9.1	23.6	20.7	4.0	20.0
	Rural	3.7	−10.2	−50.2	3.7	−5.8	−6.5	8.5	−7.5	−18.9

SOURCE: ProPAC calculations based PATBILL (1984) data. Cases classified as LOS and cost outliers have been excluded from this table.

Table A-5.—Percent Change in Average Standardized Charges for Calendar Year 1981 Compared with Fiscal Year 1984 Discharges, by DRG Type

Census Division		Routine Care			Special Care			Ancillary Services			Total		
		Surg	Med	Pair	Surg	Med	Pair	Surg	Med	Pair	Surg	Med	Pair
New England	Urban	16.9%	15.1%	32.6%	17.6%	45.5%	32.8%	52.1%	36.8%	50.8%	37.6%	26.9%	45.5%
	Rural	15.2	19.8	51.3	12.0	58.3	−5.6	66.0	56.5	27.8	44.3	37.9	32.2
Mid Atlantic	Urban	16.2	18.3	25.3	23.9	51.4	51.3	49.1	40.6	39.8	34.7	30.3	37.1
	Rural	22.0	24.7	29.6	47.8	60.8	65.0	56.3	57.0	54.0	43.6	41.8	47.6
South Atlantic	Urban	33.9	17.3	24.3	46.7	72.4	49.1	65.1	42.6	45.2	55.6	35.0	42.4
	Rural	35.7	19.6	45.5	49.9	83.8	37.1	68.0	55.5	60.7	58.7	43.5	55.2
E.N. Central	Urban	15.3	18.3	22.4	27.0	76.8	33.3	49.2	41.1	46.8	35.5	32.7	39.9
	Rural	11.2	16.6	25.2	41.6	91.8	40.0	49.1	47.6	20.7	35.6	35.1	23.6
E.S. Central	Urban	20.8	20.6	21.2	31.8	107.8	34.6	58.8	53.5	41.8	46.7	43.9	41.7
	Rural	20.1	14.1	15.7	63.0	121.8	36.8	55.5	53.5	55.5	45.5	40.1	42.1
W.N. Central	Urban	16.7	19.9	28.9	33.9	93.1	54.9	55.3	51.3	59.8	41.5	41.1	53.5
	Rural	27.6	19.7	31.5	69.4	113.0	0.9	59.1	56.4	41.7	48.7	40.8	34.9
W.S. Central	Urban	40.4	21.8	27.7	60.2	76.1	78.9	64.9	52.6	70.3	57.7	42.8	62.4
	Rural	23.4	19.3	15.4	37.8	93.1	−26.6	50.0	54.6	18.9	42.7	42.2	15.4
Mountain	Urban	39.8	12.4	27.9	38.7	61.6	83.0	68.8	35.5	67.2	58.9	28.2	62.5
	Rural	48.6	22.6	10.9	117.6	64.4	−24.2	68.7	50.2	−8.6	63.7	39.2	−2.8
Pacific	Urban	36.4	16.2	30.4	42.0	62.8	10.9	60.5	39.4	25.2	52.2	32.3	25.3
	Rural	16.6	17.0	23.6	21.3	82.5	45.7	51.4	52.4	39.3	39.3	39.4	33.7
National	Urban	23.2	23.2	27.4	33.4	84.0	50.5	55.3	48.3	53.0	43.6	39.8	47.5
	Rural	22.5	18.6	26.9	51.8	89.8	20.5	58.2	54.5	37.9	46.6	40.7	33.4

SOURCE: ProPAC calculations based on MEDPAR (1981) and PATBILL (1984) data. Cases classified as LOS and cost outliers have been excluded from this table. Outlier cases for 1981 were simulated using fiscal year 1984 LOS cutoffs. Fiscal year 1984 cost outlier thresholds were lowered to reflect the inflation in charges between 1981 and 1984.

Appendix B

Description of The Payment Model

For some of the analyses described in Chapter 4, hospital payments were estimated using a microsimulation model that computes PPS payments to individual hospitals for each year of the transition to national rates. This Appendix describes the data sources used in the model, the hospitals included and excluded from the analysis, how the model works, and the limitations of the model.

DATA SOURCES

The hospital payment model uses data from a number of sources:

- The HCFA Provider File, with information on 5,833 hospitals supplied by the intermediaries, was the source of the uninflated hospital-specific amount, hospital accounting year, teaching ratio, Metropolitan Statistical Area (MSA) designation (used to assign the appropriate wage index), and special hospital designation (sole community hospitals, rural referral centers, redesignated rural hospitals). The data included in the file are those in effect at the end of December 1984, and were verified by the HCFA Central Office.
- The fiscal year 1984 PATBILL file of 10.6 million Medicare inpatient hospital stays was used to compute individual hospital case-mix indexes and outlier payments, and to count each hospital's discharges. Stays included in the file were those for discharges occurring during fiscal year 1984 for which a bill was received by the end of April 1985. About 54 percent of the bills were submitted by hospitals under PPS, with the remainder submitted while the hospital was still under TEFRA rules. The file includes DRG assignment made using the GROUPER rules proposed by regulation for fiscal year 1986.
- A HCFA wage index file containing the index proposed by regulation for fiscal year 1986 was used.

HOSPITALS INCLUDED IN THE MODEL

Of the 5,833 hospitals for which provider-specific data were submitted by the intermediaries, 5,630 were included in the model. Hospitals were excluded for the following reasons:

- Some hospitals included on the Provider file had no matching discharges on the PATBILL file. It is likely that many of these hospitals are exempt from PPS since discharges from these hospitals were removed from the PATBILL file.
- Twelve alcohol/drug hospitals were included in the Provider file, but were removed from the analysis because they are exempt from PPS.
- Forty-one new providers were excluded from the analysis because they do not have a hospital-specific rate.
- For the analyses reported, hospitals from the two waiver states (Maryland and New Jersey) were excluded since they are not currently on PPS. They could be included in future analyses.

HOW THE MODEL WORKS

The payment amounts model uses the above data, along with the standardized amounts and payment rules as published in the September 3, 1985 *Federal Register,* to compute each hospital's PPS payments under fully hospital-specific rates and fully national rates. These regulations include new DRG weights, outlier thresholds, and area wage index values. Special rules affecting payments to sole community hospitals, rural referral centers, and redesignated rural hospitals are built into the model as they would be applied to each year's payments.

Hospital payments are modeled as if all hospitals had accounting years that begin on October 1, along with the Federal fiscal year. Although this would be an inappropriate method to use in estimating total Medicare payments, it is useful for looking at the full distributional effects of PPS payments.

In addition, proposed legislative changes in the adjustment for indirect teaching and the addition of a disproportionate share adjustment were included. Although implementation of the regulations has been delayed and the legislative changes have not yet been passed, they are likely to be finalized in the near future. Legislative changes were modeled as described in the Conference agreement to H.R. 3128, the Consolidated Omnibus Budget Reconciliation Act of 1985.

The Conference agreement would modify the indirect teaching adjustment to reduce the additional payment to teaching hospitals, and to make the formula "curvilinear." Instead of a linear add-on of 11.59 percent for every 10 percent increase in the ratio of residents to beds, the new adjustment would be reduced to 8.1 percent, with decreasing incremental payments as the ratio of residents to beds rises.

The Conference agreement defines disproportionate share hospitals and provides for additional payment to these hospitals. Urban hospitals with 100 beds or more are considered to be disproportionate share hospitals if low-income patients make up 15 percent or more of the hospital's patient load. Low-income patients are defined as the sum of the percent of the hospital's total inpatient days attributed to Medicaid patients and the percent of the hospital's Medicare inpatient days attributed to beneficiaries who are also eligible for Supplemental Security Income.

Outlier payments are estimated by applying the thresholds proposed for fiscal year 1986 to all the cases in the PATBILL file. Adjustments for indirect teaching and disproportionate share hospitals are also included in the outlier payments.

An adjustment to payments was made to estimate the Conference agreement requirement that the standardized amounts be restandardized using the new indirect teaching adjustment. Urban and rural payments were adjusted by separate factors so that total payments for each group would equal payments if the teaching adjustment were reduced to 8.7 percent and there were no additional payment for disproportionate share hospitals. This adjustment has the effect of reducing payment to urban hospitals relative to rural hospitals, since indirect teaching payments comprise a larger portion of payment to urban hospitals than to rural hospitals.

LIMITATIONS OF THE ESTIMATES

The model incorporates important simplifying assumptions that limit its accuracy in predicting total PPS payments and might affect the distributional results described here. Volume, length of stay, and case-mix information from fiscal year 1984 were used to estimate payments under fully hospital-specific and fully national rates. These factors are expected to change from year to year, and the pattern of changes might affect the distribution of PPS payments. For example, if case mix is increasing faster in one group of hospitals than the average, we may be understating the relative payments under national rates of this group. Further decline in lengths of stay would reduce the proportion of payments made for outlier cases.

Moreover, changes in policy from those used to estimate payments could have important effects on the distribution of payments. For example, if a larger reduction was made in the indirect teaching adjustment, payments to teaching hospitals would be reduced. The size of the update factor would not affect the results, however, since this would be applied equally across all hospitals, and the results describe relative payments to different types of hospitals.

A further limitation of the model is that it probably underestimates payments for cost outlier cases, but this should not affect the results significantly. A case is a cost outlier if it is not a day outlier, and its covered costs—defined as 72 percent of covered charges—exceed a threshold that is the higher of a dollar amount $13,500 or two times the Federal payment for that DRG. Payment for these cases is equal to 60 percent of the difference in the threshold and the covered costs.

In the model, covered charges in fiscal year 1984 dollars are being compared to the fiscal year 1986 threshold. Since charges are most likely higher than they were in fiscal year 1984, the model probably identifies too few cost outlier cases, and for the cases that do exceed the threshold, cost outlier payments that are too low. Since payment for cost outlier cases comprise only about 1 percent of all PPS payments, the effects of this underestimate on the model's results are probably not significant.

Appendix C

Financial Indicators

Data for financial analysis were obtained from the Healthcare Financial Management Association's (HFMA) Financial Analysis Service (FAS), a national ratio analysis service. Presently, there are approximately 1,200 free-standing hospitals subscribing; some of these hospitals are affiliated with hospital systems. Ratio analysis was performed by William O. Cleverley, Ph.D., CPA, and presented in a paper prepared for the Prospective Payment Assessment Commission entitled *Measuring the Effects of PPS* (October 1985). Information was also obtained from HFMA's *Hospital Industry Analysis Report 1980-1984.*

Where available, ratios derived from AHA Panel Survey data are included. While these ratios may reflect similar trends, values differ from those derived from FAS data. This is due, in part, to the differing methods for calculating average ratio values (different calculations are indicated in the tables). In addition, AHA values are computed using average aggregate amounts for all hospitals reporting. On the other hand, FAS ratios represent the median values for individual hospitals subscribing.

This section presents median values for several financial ratios for the period 1980 to 1984. Data are included for the following groups of hospitals: all hospitals subscribing, urban and rural hospitals, and teaching and nonteaching hospitals. In most instances, ratio values are presented for the manufacturing industry in order to compare the relative position of the health care industry.

PROFITABILITY

Profitability, as expressed by the operating margin ratio, increased 34.8 percent for all hospitals in 1984 (see Table C-1). This follows improvement for all sectors of the industry that began in 1983. Of all hospital groups, rural hospitals demonstrated the most significant increase (43.8 percent), although they still have the lowest operating margin ratio.

A factor relating to increased profitability is the lower percentage increase in allowances from gross charges. According to the deductions ratio, there was a 2.8 percent increase in 1984, where, in previous years, the annual increase ranged from 2.9 to 12.8 percent. Furthermore, the difference in deductions ratio values among urban and rural hospitals became narrower in 1984. This may, in part, reflect the differential relationship between charges and Medicare payments for these hospitals.

LIQUIDITY

In general, the health care industry has adopted a less liquid position in the 1980s (see Table C-2). Values for the current ratio, an indicator of liquidity, decreased in 1981 and 1982. While the current ratio increased slightly in 1983 and 1984, values are still 2.1 percent below 1980 levels. Hospital characteristic groupings represent a wide range of values for the current ratio. For example, rural hospitals have consistently had the highest current ratio, or have been in the most liquid position for the period 1980 to 1984. On the other hand, urban hospitals, for the most part, have had the lowest current ratios of all groups, implying that a greater percentage of debt is used to finance current asset investments.

Significant increases that occurred in 1984 in hospitals' days in accounts receivable absorbed some of the increased cash flow from operating

Table C-1.—Trends in Hospital Profitability Ratios

	Operating Margin Ratio[a]					Percent Change			
	1980	1981	1982	1983	1984	1981	1982	1983	1984
All hospitals	0.019	0.020	0.020	0.023	0.031	5.3%	0.0%	15.0%	34.8%
Rural	0.017	0.014	0.014	0.016	0.023	−17.6	0.0	14.3	43.8
Urban	0.021	0.021	0.021	0.026	0.033	0.0	0.0	23.8	26.9
Teaching	0.016	0.018	0.018	0.021	0.030	12.5	0.0	16.7	42.9
Nonteaching	0.020	0.020	0.020	0.024	0.033	0.0	0.0	20.0	37.5
Manufacturing	0.066	0.053	0.037	0.045	0.043	−19.7	−30.2	21.6	−4.4
AHA Panel Survey hospitals[b]	0.046	0.047	0.051	0.051	0.062	2.2	8.5	0.0	21.6
	Deductions Ratio[c]					Percent Change			
	1980	1981	1982	1983	1984	1981	1982	1983	1984
All hospitals	0.139	0.143	0.156	0.176	0.181	2.9%	9.1%	12.8%	2.8%
Rural	0.133	0.137	0.153	0.173	0.180	3.0	11.7	13.1	4.0
Urban	0.137	0.141	0.158	0.177	0.181	2.9	12.1	12.0	2.3
Teaching	0.162	0.159	0.172	0.197	0.193	−1.9	8.2	14.5	−2.0
Nonteaching	0.136	0.143	0.154	0.175	0.174	5.1	7.7	13.6	−0.6

[a] (Total operating revenue - operating expenses) divided by total operating revenue.
[b] (Total revenue - total expenses) divided by total revenue.
[c] Deductions divided by gross patient service revenue.

profits. The average collection period increased by 2.7 days, to 64.2 in 1984. Some of this increase may be attributable to changes in Medicare payment policies which have delayed payment.

Values for the average payment period have also been increasing over time, with the increase occurring in 1984 being greater than in previous years. This may, in part, be attributable to the increase in receivables days in 1984. Hospitals may be forced to conserve working capital cash balances through delay of payment in order to fund the increase in receivable days.

ASSET UTILIZATION

All sectors of the industry experienced a reduction in the total asset turnover ratio (see Table C-3). This follows a downward trend that began in 1982. Decreases largely reflect declining utilization and the presence of excess capacity.

The average age of plant ratio, which measures the average age of hospitals' fixed assets, continued to decrease in 1984.[1] Even so, the rate of decrease is slower in 1983 and 1984 than in previous years. While the industry's plant continues to be younger, new asset acquisition may be slowing down. The presence of excess capacity may have resulted in some delays in capital replacement. Furthermore, hospitals are moving toward alternative delivery systems, some which may be less capital-intensive.

Table C-2.—Trends in Hospital Liquidity Ratios

	Current Ratios[a]					Percent Change			
	1980	1981	1982	1983	1984	1981	1982	1983	1984
All hospitals	1.901	1.855	1.824	1.831	1.862	−2.4%	−1.7%	0.4%	1.7%
Rural	2.068	1.962	2.017	2.006	2.086	−5.1	2.8	−0.5	4.0
Urban	1.871	1.800	1.757	1.779	1.788	−3.8	−2.4	1.3	0.5
Teaching	1.813	1.808	1.771	1.775	1.810	−0.3	−2.0	0.2	2.0
Nonteaching	1.950	1.897	1.827	1.839	1.864	−2.7	−3.7	0.7	1.4
Manufacturing	1.664	1.620	1.613	1.625	1.570	−2.6	−0.4	0.7	−3.4
AHA Panel Survey hospitals	2.390	2.380	2.310	2.250	2.250	−0.4	−2.9	−2.6	0.0

	Days in Patient Accounts Receivable[b]					Percent Change			
	1980	1981	1982	1983	1984	1981	1982	1983	1984
All hospitals	62.4	61.1	61.0	61.5	64.2	−2.1%	−0.2%	0.8%	4.4%
Rural	64.3	62.8	64.1	64.1	65.7	−2.3	2.1	0.0	2.5
Urban	62.0	60.4	60.1	60.3	63.4	−2.6	−0.5	0.3	5.1
Teaching	64.9	64.9	61.2	63.7	66.5	0.0	−5.7	4.1	4.4
Nonteaching	62.0	60.8	60.6	60.5	63.7	−1.9	−0.3	−0.2	5.3
Manufacturing	44.8	41.9	41.4	45.2	44.1	−6.5	−1.2	9.2	−2.4
AHA Panel Survey hospitals[c]	58.8	54.8	55.0	59.8	64.3	−6.8	0.4	8.7	7.5

	Average Payment Period Ratios[d]					Percent Change			
	1980	1981	1982	1983	1984	1981	1982	1983	1984
All hospitals	49.1	49.7	50.6	52.1	54.2	1.2%	1.8%	3.0%	4.0%
Rural	48.3	48.6	49.5	51.1	50.6	0.6	1.9	3.2	−1.0
Urban	49.1	49.9	51.0	52.6	55.2	1.6	2.2	3.1	4.9
Teaching	48.5	51.0	51.8	55.0	55.5	5.2	1.6	6.2	0.9
Nonteaching	49.0	49.4	50.1	51.7	53.6	0.8	1.4	3.2	3.7
Manufacturing	78.8	77.0	78.7	81.9	83.1	−2.3	2.2	4.1	1.5

[a] Current assets divided by current liabilities.
[b] Net patient accounts receivable divided by net patient service revenue, then divided by 365. Note: Calculation is not adjusted for leap years (1980 and 1984). This may overstate ratio values slightly for these years.
[c] AHA days in patient accounts receivable ratio is adjusted for leap years.
[d] Current liabilities divided by operating expenses minus depreciation, then divided by 365. Note: Calculation is not adjusted for leap years (1980 and 1984). This may overstate ratio values slightly for these years.

Table C-3.—Trends in Hospital Asset Utilization Ratios

	Total Asset Turnover[a]					Percent Change			
	1980	1981	1982	1983	1984	1981	1982	1983	1984
All hospitals	0.99	1.01	1.00	0.98	0.94	2.0%	−1.0%	−2.0%	−4.1%
Rural	0.95	0.99	1.00	0.96	0.93	4.2	1.0	−4.0	−3.1
Urban	1.00	1.02	1.01	0.99	0.94	2.0	−1.0	−2.0	−5.1
Teaching	1.00	1.03	1.04	0.99	0.97	3.0	1.0	−4.8	−2.0
Nonteaching	0.99	1.01	1.00	0.97	0.92	2.0	−1.0	−3.0	−5.2
Manufacturing	1.37	1.37	1.26	1.24	1.26	0.0	−8.0	−1.6	1.6
	Average Age of Plant Ratios[b]					Percent Change			
	1980	1981	1982	1983	1984	1981	1982	1983	1984
All hospitals	7.30	7.18	7.00	6.96	6.88	−1.6%	−2.5%	−0.6%	−1.1%
Rural	7.69	7.50	7.30	7.31	7.01	−2.5	−2.7	0.1	−4.1
Urban	7.18	7.10	6.88	6.83	6.82	−1.1	−3.1	−0.7	−0.1
Teaching	7.59	7.36	7.18	7.10	7.27	−3.0	−2.4	−1.1	2.4
Nonteaching	7.23	7.14	6.97	6.88	6.80	−1.2	−2.4	−1.3	−1.2
Manufacturing	6.49	6.19	6.06	6.11	6.09	−4.6	−2.1	0.8	−0.3

[a] Total operating revenue divided by total assets.
[b] Accumulated depreciation divided by depreciation expense.

DEBT FINANCING

The hospital industry had been moving toward a position of increased debt until 1984, when the equity financing ratio slightly increased to a value of .480 (see Table C-4). Nonteaching hospitals have the lowest percentage of equity financing and, therefore, the highest percentage of debt financing of all characteristic groupings. Rural hospitals, on the other hand, have the highest equity levels.[2] The wide variation in the capital structure among hospital groups illustrates the difficulties in arriving at capital payment policy under PPS.

As a result of stable levels of indebtedness and increased operating margins in 1984, hospitals' ability to repay existing debt service improved. For example, the ratio of cash flow to total debt improved significantly for all sectors of the industry in 1984. This improvement follows a decline that occurred in 1982 and 1983.

Similar favorable increases in other debt repayment ratios, such as the times interest earned and debt service coverage ratios, were also observed. (The times interest earned ratio measures the coverage of interest requirements, especially long-term debt, from existing operating income. The debt service coverage ratio measures the level of total debt service, i.e., principal and interest, covered by the hospital's cash flow.)[3]

Table C-4.—Trends in Hospital Debt Financing Ratios

	Equity Financing[a]					Percent Change			
	1980	1981	1982	1983	1984	1981	1982	1983	1984
All hospitals	0.535	0.525	0.499	0.475	0.480	−1.9%	−5.0%	−4.8%	1.1%
Rural	0.613	0.583	0.552	0.516	0.523	−4.9	−5.3	−6.5	1.4
Urban	0.514	0.507	0.499	0.485	0.480	−1.4	−1.6	−2.8	−1.0
Teaching	0.550	0.544	0.521	0.481	0.493	−1.1	−4.2	−7.7	2.5
Nonteaching	0.534	0.522	0.495	0.473	0.478	−2.2	−5.2	−4.4	1.1
Manufacturing	0.496	0.488	0.485	0.491	0.477	−1.6	−0.6	1.2	−2.9
	Cash Flow to Total Debt Ratio[b]					Percent Change			
	1980	1981	1982	1983	1984	1981	1982	1983	1984
All hospitals	0.187	0.189	0.183	0.170	0.194	1.1%	−3.2%	−7.1%	14.1%
Rural	0.193	0.198	0.183	0.166	0.186	2.6	−7.6	−9.3	12.0
Urban	0.182	0.187	0.171	0.174	0.198	2.7	−8.6	1.8	13.8
Teaching	0.191	0.185	0.184	0.181	0.216	−3.1	−0.5	−1.6	19.3
Nonteaching	0.187	0.190	0.182	0.170	0.193	1.6	−4.2	−6.6	13.5
Manufacturing	0.218	0.211	0.174	0.191	0.200	−3.2	−17.5	9.8	4.7

[a] Fund balance divided by total assets.
[b] Excess of revenue over expense plus depreciation divided by current liabilities plus long-term debt.

Notes to Appendix C

1. The *average age of plant ratio* is computed by dividing accumulated depreciation by depreciation expense. Until an asset is disposed, it is customary to carry the asset and accumulated depreciation amounts on the balance sheet. If an asset has been fully depreciated, yet not disposed, the accumulated depreciation amount will continue to be included in the ratio calculation, although there will be no corresponding depreciation expense for the asset. This would, therefore, contribute to an increase in average asset age.
2. This may be due to the fact that rural hospitals have older physical plant and, therefore, have not required debt to finance its replacement. In addition, ownership of rural hospitals may contribute to reduced debt financing levels. Specifically, 45 percent of rural hospitals are government sponsored (according to Medicare cost report data). For these hospitals, some of their debt may not be shown on their records. Instead, it would be carried on the sponsoring entity's records. This would, therefore, increase the proportion of assets financed with equity.
3. The *times interest earned ratio* is computed by dividing excess of revenues over expenses plus interest expense by interest expense. The *debt service coverage ratio* is calculated as cash flow plus interest expense divided by principal payment plus interest expense.

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